

TWR-63641

**STS-56, RSRM-031, 360L031  
KSC PROCESSING CONFIGURATION  
AND DATA REPORT**

**8 December 1993**

**FINAL**

**Prepared for:**

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
GEORGE C. MARSHALL SPACE FLIGHT CENTER  
MARSHALL SPACE FLIGHT CENTER, ALABAMA 35812**

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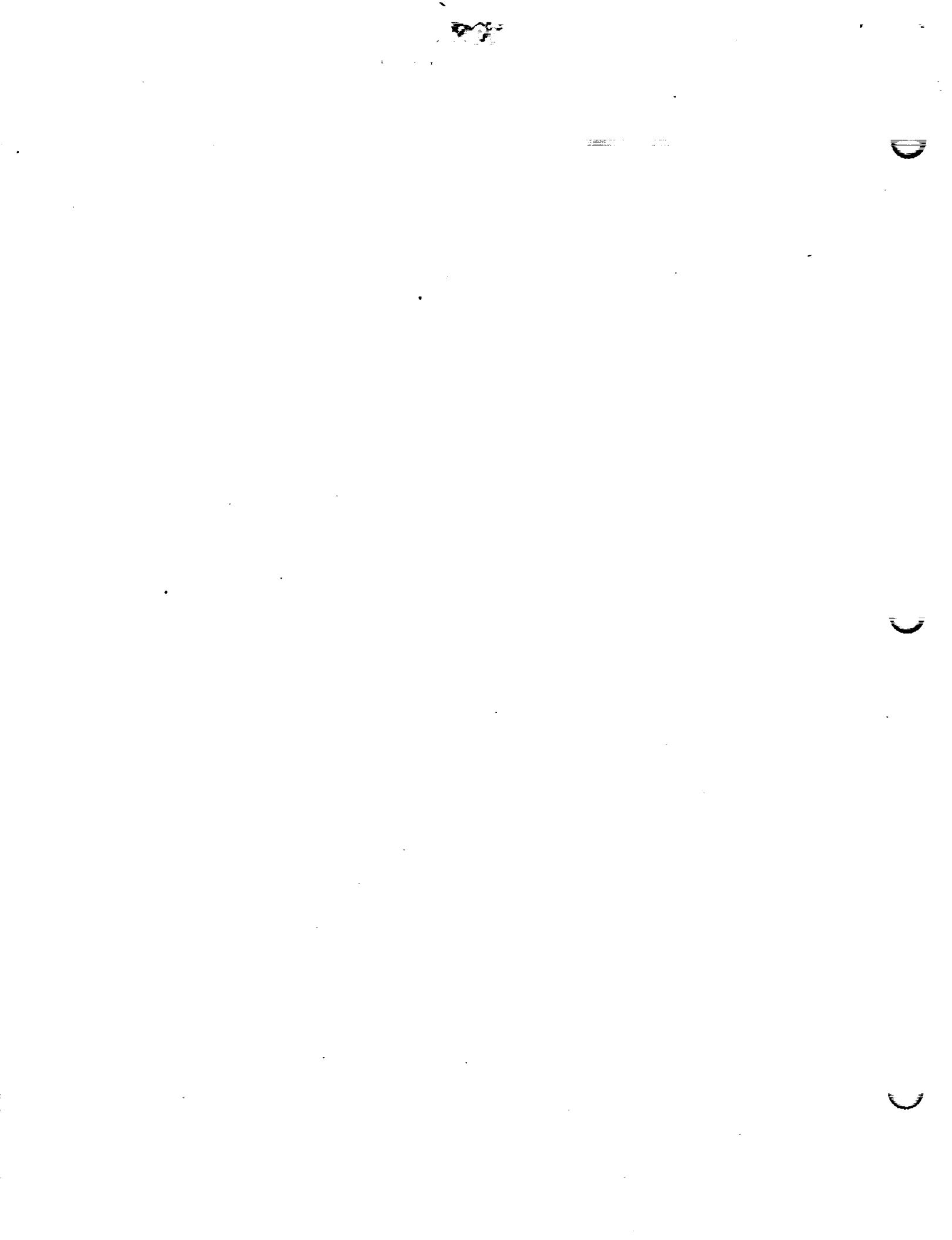
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KSC PROCESSING CONFIGURATION  
AND DATA REPORT

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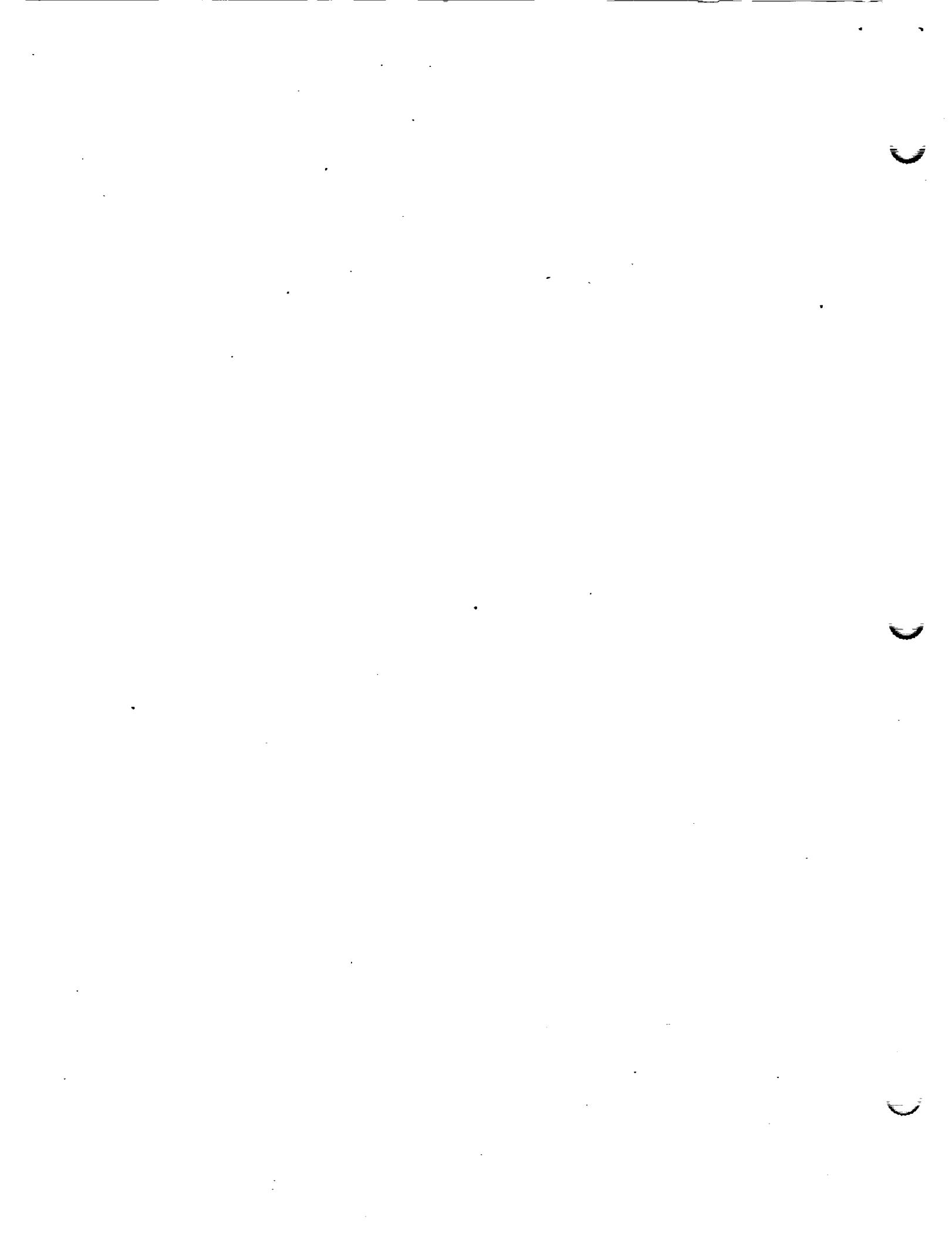
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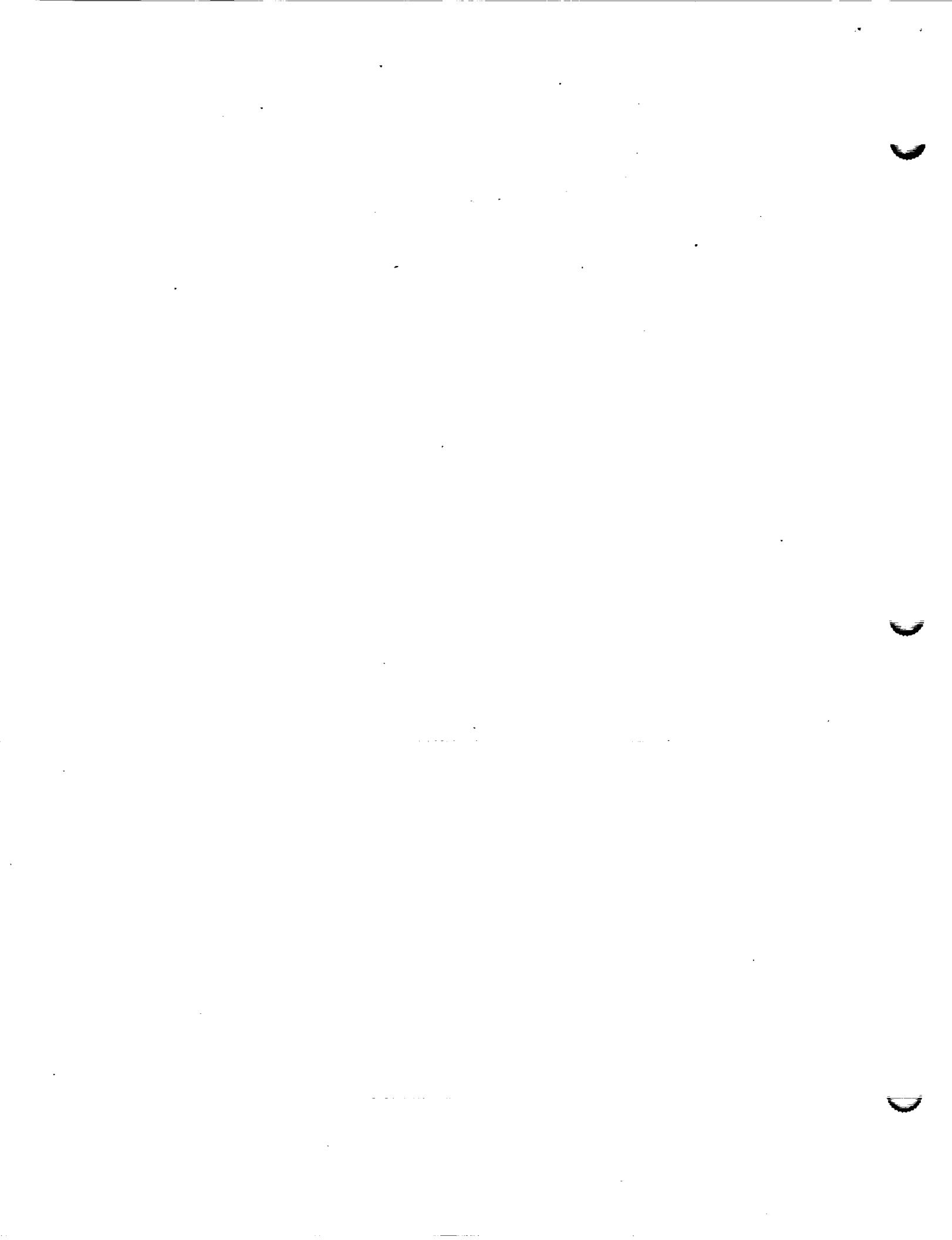
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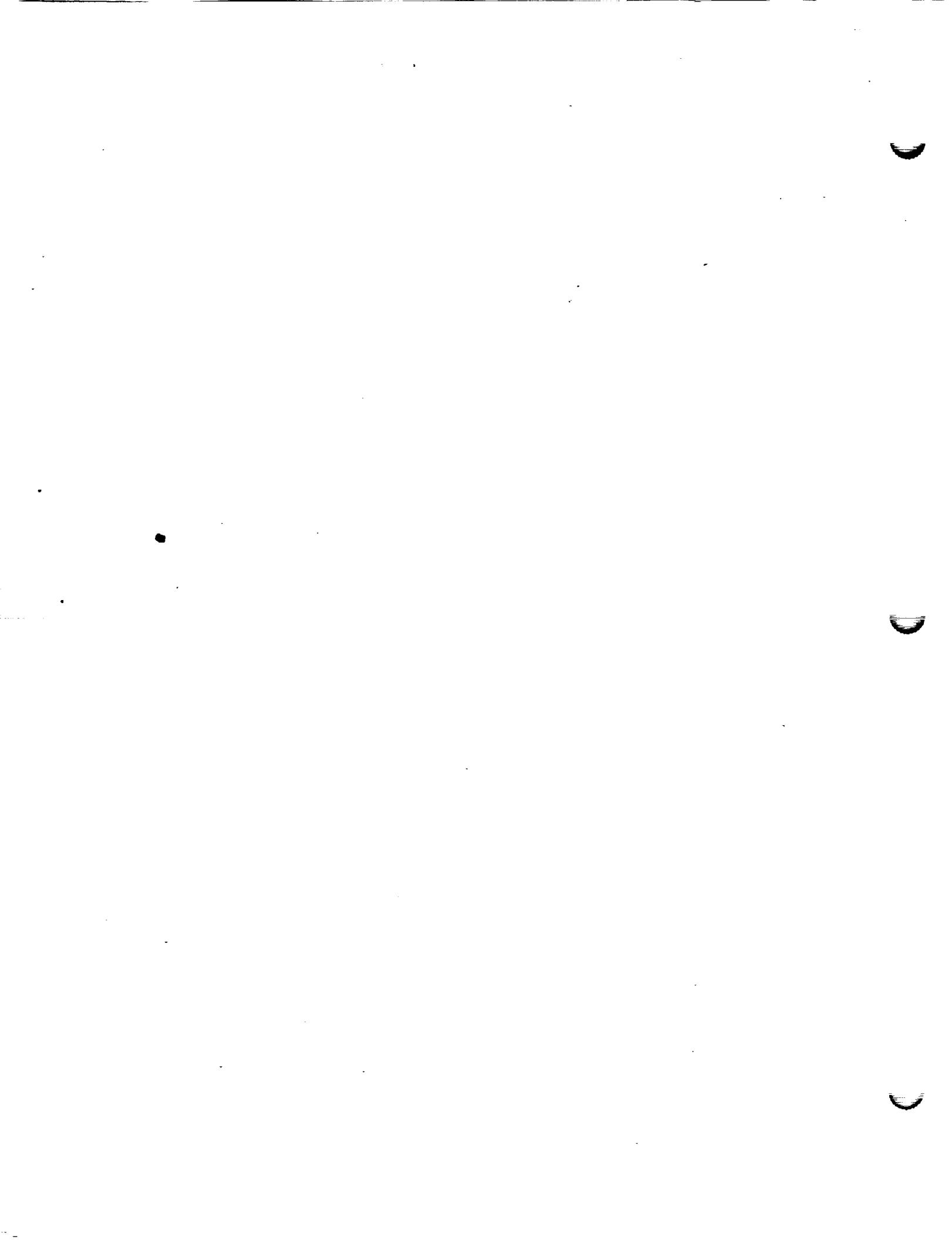
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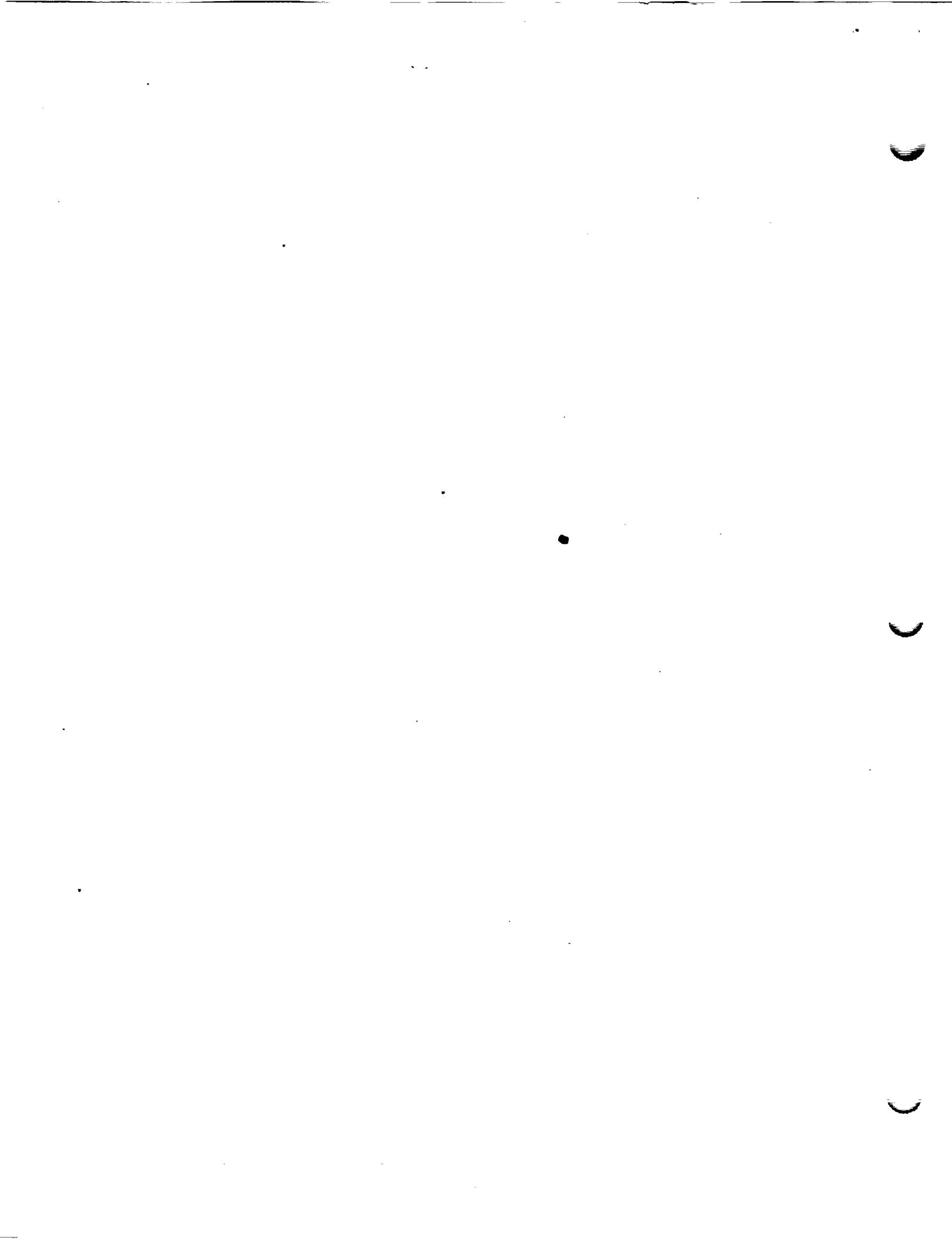
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## 1.0 INTRODUCTION

KSC Processing Configuration and Data Report is being provided as a historical document and as an enhancement to future RSRM manufacturing and processing operations. The following sections provide information on segment receipt, aft booster build-up, booster assembly and closeout for STS-56, RSRM flight set 360L031.

Section 2.0 contains an summary of RSRM-031 processing. Section 3.0 discusses any significant problems or special issues that require special attention.

Sections 4.0 through 6.0 contain narrative descriptions of all key events, including any related processing problems. Appendix A provides Engineering Specifications and Changes. A list and matrix of all Problem Reports (PRs) pertinent to this flight set is provided in Appendix B. The matrix was provided by the Thiokol LSS Quality Engineering office. Copies of the PRs generated during the processing of RSRM-031 will be provided upon request. Appendix C contains the Motor Set Status matrix, which provides milestone dates for the RSRM-031 flow.

Section 7.0 provides recommendations, if any, for the improvement of flight hardware processing. Section 8.0 contains data sheets that provide flight hardware parts and consumables information installed during the booster build-up and stacking operations by location, lot/serial number, expiration and cure dates/times, and installation dates.

The postflight recovery and disassembly assessment was performed in accordance with TWR-50050B, KSC Postflight Engineering Evaluation Plan and TWR-60617, Postflight Hardware Special Issues Report. All the information obtained during recovery and disassembly is documented in TWR-60677, KSC Ten-Day Postflight Hardware Evaluation Report.

## 2.0 SUMMARY

The stack of RSRM-031 started on January 11, 1993 and was completed on February 8, 1993. Thirteen PR's were generated against the SRM hardware. Four of the Thirteen PR's were Thiokol inspection responsibility and two were Thiokol engineering.

## 3.0 SPECIAL PROBLEMS

After the right fwd booster handling ring was removed a white powdery substance and oily liquid was found intermittently 360 degrees on the J-seal insulation. A sample of both materials were forwarded to Utah for analysis. The analysis identified the primary component in the liquid is calcium and carbon with traces of oxygen, silicon, sulfur and chloride. Not enough oily material was sampled so the laboratory could not determine the substance's component or components. The material was removed.

Corrosion was found on the left and right nozzle assembly radial and axial bolt heads in the VAB. The corrosion was first discovered on RSRM-32 radial and axial bolts during booster build-up in the RPSF. A sample of the corrosion was returned to the plant for examination. Research found that prior to nozzle installation in Utah the bolt heads were cleaned with a steel brush. Steel residue from the brush remained on the bolt heads. The contamination on the bolt heads was oxidation of the steel brush residue. In the VAB the corrosion was removed from the bolt heads with Scotch Brite pads, (Ref: PR SB-BI058L-0006 & SB-BI058R-0009).

While the flight set was at Pad B the Ice-Frost-Debris Team discovered a small mass of HD-2 grease 2 feet below the left center field joint at 45 degrees. The condition was not a debris concern. MRB approval was granted to accept this condition for "use-as-is", (Ref: PR SB-BI058L-0010).

#### 4.0 SEGMENT/EXIT CONE RECEIPT AND INSPECTION

##### 4.1 Left Hand

###### 4.1.1 Exit Cone

The aft exit cone was off-loaded on November 19, 1992. The receiving inspection was completed on November 20, 1992. No problems were identified.

###### 4.1.2 Aft Segment

The aft segment was received at KSC on November 18, 1992. The segment was off-loaded on November 9, 1992. No PR conditions were found on the hardware. The receiving inspection was completed on December 13, 1992.

###### 4.1.3 Aft Center Segment

The aft center segment was received at KSC on November 18, 1992. Two cracks and one cut were found in the propellant aft face inspection. MR rational was approved to trim the propellant discrepancies, (Ref: PR SR-LAC-058-006-0001). The segment receiving inspection was completed on December 9, 1992.

###### 4.1.4 Forward Center Segment

The forward center segment was received at KSC on November 18, 1992. The receiving inspection was completed on November 23, 1992 and no problems identified.

###### 4.1.5 Forward Segment

The forward segment was received at KSC on November 18, 1992. The receiving inspection was completed on December 15, 1992. No problems were identified.

##### 4.2 Right Hand

###### 4.2.1 Exit Cone

The exit cone was received at KSC on November 9, 1992. The receiving inspection was completed on November 23, 1992. No problems were identified.

###### 4.2.2 Aft Segment

The aft segment was received at KSC on November 18, 1992. The receiving inspection was completed on January 13, 1993. No problems were identified.

4.0 SEGMENT/EXIT CONE RECEIPT AND INSPECTION (continued)

4.2 Right Hand (continued)

4.2.3 Aft Center

The aft center segment was received a KSC on December 10, 1992. The receiving inspection was completed on January 12, 1993. No problems were identified.

4.2.4 Forward Center Segment

The forward center segment was received at KSC on December 10, 1992. The receiving inspection was completed on January 12, 1993. No problems were identified.

4.2.5 Forward Segment

The forward segment was received at KSC on December 10, 1992. The receiving inspection was completed on December 11, 1992. No problems were identified.

5.0 AFT BOOSTER BUILD-UP

5.1 Left Aft Booster

The aft booster skirt mate and aft booster build-up started on November 11, 1992. The aft exit cone mate to the aft segment was on November 23, 1992. Exit cone leak test was completed on November 24, 1992. The receiving inspection was completed on December 14, 1992.

5.2 Right Aft Booster

The right aft booster build-up started on December 2, 1992. The aft skirt mate was on December 2, 1992. Aft exit cone mate to the nozzle assembly was on December 15, 1992. During the exit cone leak test panel dead head test, the pressure line was connected to the joint. The line should have been sealed with a GSE plug. During panel dead heat the joint received 101 psig. STW7-3475 specifies joint test pressure is 83 11+/- 10 psig. Wasatch was notified of the 101 psig pressure introduced to the joint. They allowed the leak test to continue. At completion of the joint leak test Wasatch reviewed the leak test data. Engineering concluded that the small over pressure of the joint during panel dead head did not adversely affect the joint configuration. MRB approval was granted to "Use-As-Is" (Ref: PR AB-BI058R-0001).

## 5.0 AFT BOOSTER BUILD-UP (continued)

### 5.2 Right Aft Booster (continued)

After removal of the fwd handling ring a liquid substance mixed with a powdery substance existed intermittently 360 degrees around the J-seal. An analysis of the materials in Utah indicated that the primary powder component is calcium and carbon with traces of silicon, sulfur and chloride. The liquid was not positively identified. The material was removed from the J-Seal. The PR was closed as insufficient data to determine the cause of the contamination, (Ref: PR AB-BI058R-0006).

## 6.0 SEGMENT ASSEMBLY AND CLOSEOUT

The ASSEMBLY AND CLOSEOUT section is separated into two parts. The mechanical stacking and mating operation (Assembly) and the joint protection system installation (Closeout).

### 6.1 Left Hand SRB Assembly

#### 6.1.1 Aft Booster to Aft Center

The left aft booster was moved into the Vehicle Assembly Building (VAB) transfer aisle on January 7, 1993. The beam hook-up to the aft booster was delayed due to three PR's on the crane. The booster was lifted to High Bay 1 on January 11, 1993. The booster mate on the Mobile Launch Platform (MLP) was completed on January 12, 1993. Re-shimming of the holdown posts was required. The left aft center segment was moved into the transfer aisle and removed from the pallet on January 12, 1993. The segment was lifted into High Bay 1 on January 13, 1993. During segment lowering to the FJAF the hydroset fuse tripped, (Ref: PR SB-BI058L-0001). The fuse was replaced and failed again. Per recommendation from Utah joint mate was halted and the segment returned to the transfer aisle. The PR was changed to a GSE PR (Ref: H72-0828-11-001-0050). During ABC power phase verification three power lead connections were found to have poor contact. The leads were repaired and the segment mate operation resumed.

The Left Aft Center was lifted into High Bay 1 the second time on January 18, 1993. Segment mate was completed on January 19, 1993. During primary/barrier high pressure leak test TD9 exceeded 10 psig in less than 8 minutes. The requirement is not to exceed 10 psig within the 30 minute test. Leak test panel, serial number 003 was replaced with panel serial number 007. The primary/barrier high pressure leak test was performed. The leak test was completed, (Ref: PR SB-BI058L-0002).

## 6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

### 6.1 Left Hand SRB Assembly (continued)

#### 6.1.2 Aft Center to Forward Center

The forward center was moved into the VAB on January 20, 1993. Mate of the Forward Center to the Aft Center was delayed due to the leak test PR on the left aft joint leak test. If the leak test was not successfully completed the possibility that the Right Center segment would be removed from the Left Aft segment, (Ref: PR SB-BI058L-0002). The problem was resolved and the segment was lifted into High Bay 1 on January 21, 1993. During primary and secondary O-Ring inspection both O-Rings were removed from the platform for suspect flat spots on the rubber. Replacement O-rings were installed. Joint mate was completed on January 24, 1993. A preliminary inspection of the O-Rings was conducted at Hangar AF, Cape Canaveral Air Force Station. The flat spots were identified as a buffing mark and a rework area. Both O-rings were shipped to Thiokol, Wasatch for further evaluation. The O-Ring diameters where the buffing mark and rework area is located were within acceptable values, 0.3856-0.2859 inch diameter, DWG 1U75150. The O-rings were then sent to Hydrapack. The suspect cross sectional locations were measured with a laser micrometer and again found to be within drawing requirements, (Ref: PR SB-BI058L-0003).

During joint leak test the primary to secondary low pressure volume determination temperature sensor read 119.43 deg f. (Ref: PR SB-BI058L-0004). The RTD connection was loose. The connection was tightened by hand and the PR constraint was lifted to allow completion of the primary to secondary low pressure test. The joint leak test was completed January 24, 1993.

#### 6.1.3 Forward Center to Forward

The forward segment was moved into the VAB on January 25, 1993. The segment was lifted into High Bay 1 on January 25, 1993 and joint mate was accomplished on January 26, 1993. The joint leak test was completed on January 27, 1993.

#### 6.1.4 Forward to Forward Assembly

The left forward assembly was lifted from the transportation dolly on January 27, 1993 and moved into High Bay 1. The forward assembly and the forward segment were mated the same day, January 27, 1993, with no problems.

#### 6.1.5 Safe and Arm Device

The S&A was installed on February 23, 1993 with no problems. The leak test was performed on February 25, 1993.

**6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)**

**6.2 Left Hand SRB Closeout**

**6.2.1 Aft Joint**

The aft joint closeout started on January 26, 1993 and was completed without problems. Splice plate installation and hypalon top coat cure was complete on February 2, 1993.

**6.2.2 Center Joint**

The center joint closeout started on January 28, 1993 and was completed without problems. Splice plate installation and joint closeout was complete on February 4, 1993.

**6.2.3 Forward Joint**

The center joint closeout started on January 28, 1993 and was completed without problems. Splice plate installed an the hypalon top coat cure complete on February 5, 1993.

**6.2.4 Forward Assembly**

The forward assembly closeout started on February 1, 1993. The splice plate and thermal barrier closeout was complete on February 4, 1993.

**6.2.5 Systems Tunnel**

The system tunnel closeout was complete on February 28, 1993. Two GEI temperature sensors at the nozzle flex bearing, B06T7011A and B06T047A, exceeded the allowable resistance in the sensor test. Real time trouble shooting was performed on both GEI sensors. Sensor B06T7011A was found pinned incorrectly. The sensor was repinned and the sensor resistance measurements were within expected values. GEI sensor B06T7047A did not read the expected values. GEI sensor B06T7047A was determined to be discrepant in Utah, reference DR 413126. Sensor B06T7047A is a preplanned contingency for LH nozzle-to-case joint temperature sensors, which are launch commit criteria. A waiver was approved to use sensor B06T7047A as is, (Ref: PR SB-BI058L-0005).

## 6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

### 6.3 Right Hand SRB Assembly

#### 6.3.1 Aft Booster to Aft Center

The aft booster was moved into the VAB transfer aisle on January 22, 1993. The booster was lifted to High Bay 1 on January 22, 1993 and lowered to the holdown posts. Re-shimming of the holdown post was not required. The booster mate was completed on January 23, 1993. The aft center segment moved into the VAB on January 27, 1993.

The aft center segment was lifted into High Bay 1 on January 28, 1993. Joint mate was accomplished on January 29, 1993. During joint leak test two PR's were written: (Ref: PR SB-BI058R-0004). On leak test panel serial number 007, CV12 knob rotated freely during closure. Closure of the valve could not be verified. The panel was replaced with leak test panel Serial Number 003. During leak test the primary/barrier temp transducer reading was -327.9 Degree F (Ref: SB-BI058R-0005). The RTD is not used during this function of the test so it was not replaced. The joint leak test was completed and the 45 degree and 135 degree leak test plugs were installed on February 2, 1993.

#### 6.3.2 Aft Center to Forward Center

The forward center segment was moved into the VAB transfer aisle on January 29, 1993. The segment was to the High Bay on January 30, 1993. The joint mate was accomplished on January 31, 1993. The joint leak test was completed and the 45 degree and 135 degree leak test plugs were installed on February 1, 1993.

On February 11, 1993 a PR was generated to investigate possible incorrect transducer calibration on the joint leak test panels. The incorrect transducer calibration effects the joint leak test results of the right aft and right center joint. The investigation findings indicated transducer calibrations had been updated on leak test computer serial number 003 but not leak test computer serial number 007. During the right aft joint leak test, panel serial number 007 control valve, CV12, rotated freely. Panel serial number 007 was replaced with panel serial number 003 which can be interchanged since the calibration data for all serial number panels are loaded into each panel. Leak test computer serial number 007 had the old transducer data. The right aft joint passed the leak test but with old transducer data. The right center joint passed leak test with the old data. The same configuration was used because leak test panel serial number 007 was still being repaired. Leak test values from each joint test were recalculated. Using the corrected transducer calibration data, all test were acceptable. The cause of the PR was GSE workmanship, (Ref: PR SB-BI958R-0007).

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6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

6.3 Right Hand SRB Assembly (continued)

6.3.3 Forward Center to Forward

The forward segment was moved into the VAB transfer aisle on February 3, 1993. Tang inspections were completed and the segment was lifted into High Bay 1 on February 4, 1993. The segment joint mate was on February 5, 1993. The joint leak test was complete and the 45 degree and 135 degree leak test plugs were installed on February 8, 1993.

6.3.4 Forward to Forward Assembly

The forward assembly was lifted into High Bay 1 on 6 February 1993. The assembly was mated to the forward segment the same day with no problems.

6.3.5 Safe and Arm Device

The S&A was installed on January 23, 1993. Leak test was performed on February 25, 1993.

6.4 Right Hand SRB Closeout

6.4.1 Aft Joint

The aft joint closeout started on February 2, 1993. The splice plate and FJPS closeout was complete on February 8, 1993.

6.4.2 Center Joint

The center joint closeout started on February 2, 1993. The splice plate and thermal barrier closeout was complete on February 8, 1993.

6.4.3 Forward Joint

The fwd joint closeout started on February 8, 1993. The splice plate and thermal barrier closeout was complete on February 11, 1993.

6.4.4 Forward Assembly

The forward assembly closeout started on February 8, 1993. The splice plate was installed and joint closeout complete on February 10, 1993.

6.4.5 Systems Tunnel

The system tunnel closeout was completed on February 24, 1993.

## 6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

### 6.5 Integrated Testing and Launch

#### 6.5.1 Joint Heater Functional Test

Igniter joint and field joint heaters were successfully tested during the SRB Electrical Check (B5307) on February 19, 1993. The performance of each heater is listed in the following table.

<u>Joint</u>	RSRM JOINT HEATER FUNCTIONAL TEST					
	Primary			Secondary		
	Max Voltage <u>vac</u>	Max Current <u>amps</u>	Max Power <u>watts</u>	Max Voltage <u>vac</u>	Max Current <u>amps</u>	Max Power <u>watts</u>
<u>LH</u>						
IGNITER	208.8	02.18	455	208.8	2.18	450
FWD FJ	207.6	16.96	3521	204.0	16.96	3460
CTR FJ	205.2	16.80	3447	206.4	16.40	3385
AFT FJ	206.4	16.48	3401	206.4	16.32	3368
<u>RH</u>						
IGNITER	208.8	2.18	455	207.6	21.4	444
FWD FJ	208.8	16.72	3458	205.2	16.48	3382
CTR FJ	206.4	16.48	3401	205.2	16.16	3356
AFT FJ	207.6	16.96	3521	207.6	16.16	3355

## 6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

### 6.5 Integrated Testing and Launch (continued)

#### 6.5.2 Shuttle Interface Test/Pad Validation Test

During the Shuttle Interface Test (S0008) and Pad Validation Test conducted March 5, 1993, all GEI instruments were verified to be operational.

#### 6.5.3 Terminal Countdown Demonstration Test

The Terminal Countdown Demonstration Test (TCDT) was conducted on March 18, 1993.

The Operational Pressure Transducer (OPT) 75% Simulation was conducted during the TCDT verifying proper operation of the six (6) transducers. The results are presented in the following table.

<u>OPT S/N</u>	<u>MEASUREMENT ID NUMBER</u>	75% SIM. <u>psia</u>	AMBIENT <u>psia</u>
LH			
193	B47P1300c	763.8	14.6
250	B47P1301c	765.8	12.6
192	B47P1302c	763.8	12.6
RH			
067R3	B47P2300c	763.8	12.6
069R2	B47P2301c	753.8	6.7
070R2	B47P2302c	761.8	12.6

The OMRSD limits are: 75% Sim. 729 to 799 psia.  
Ambient -7 to 33 psia.

The joint heaters were operated during TCDT to verify their operation with pad electrical services. During heater operation, LH center field joint sensors B96T7064A (15 deg) and B0T70675A (285 deg) were reading 6-9 Degrees F lower than B06T7065A (135 Degrees) and B06T7066A (195 Degrees) and RH forward field joint sensors (B06T8060A, B06T8061A, B06T8062A, and B06T8063A) showed a span of approximately 12 Degrees F.

Both igniter heaters were manufactured incorrectly which caused the secondary heaters to produce non-uniform circumferential heating. Thermal assessment indicates that secondary heaters would maintain LCC requirements at an ambient temperature as low as 40 F.

All voltage and current readings were similar to those experienced during electrical checkout in the VAB. The amount of time the heaters were powered up is listed in the following table.

6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

6.5 Integrated Testing and Launch (continued)

6.5.3 Terminal Countdown Demonstration Test (continued)

<u>HEATER LOCATION</u>	PRIMARY <u>HR:MIN</u>	SECONDARY <u>HR:MIN</u>
Igniters	1:49	2:47
Field Joints	1:51	2:56

6.5.4 Ordnance Installation

During the ordinance installation procedure (S5009) conducted January 7, 1993, the Safe and Arm (S&A) devices were verified as operational by rotating each device from safe to armed and from armed back to safe ten (10) times.

The results of this verification are listed in the table below and indicate that all rotations were within the 2 minute maximum rotation time requirement.

<u>ROTATION</u>	<u>LH S&amp;A</u> <u>S/N 039</u>		<u>RH S&amp;A</u> <u>S/N 040</u>	
	<u>ARM</u>	<u>SAFE</u>	<u>ARM</u>	<u>SAFE</u>
1	0.813	0.733	0.693	0.813
2	0.813	0.693	0.693	0.773
3	0.773	0.853	0.653	0.733
4	0.733	0.813	0.813	0.653
5	0.693	0.733	0.773	0.873
6	0.773	0.733	0.653	0.813
7	0.773	0.693	0.653	0.773
8	0.733	0.813	0.653	0.693
9	0.813	0.853	0.693	0.733
10	0.773	0.853	0.653	0.733

6.5.5 Countdown To Launch

Due to a main engine valve problem, the countdown to launch on April 6, 1993 was stopped at T-11 sec. A second countdown to launch was picked up at T-11 hr on April 7, 1993.

6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

6.5 Integrated Testing and Launch (continued)

6.5.5 Countdown To Launch (continued)

Countdown No. 1

All T and L times in this section are based on the scheduled launch time of 05:32 GMT (1:32 AM EDT) on April 4, 1993. The prediction of the Propellant Mean Bulk Temperature (PMBT) prepared at L-9 days was 69 Degrees F, and at L-2 days and L-24 hours was 70 Degrees F.

At approximately L-18 hours the igniter heaters were powered up. The field joint heaters were powered up at approximately L-11.5 hours. All heaters operated properly on their primary circuits providing operational temperature ranges of 96-101 Degrees F at the igniter joint sensors and 89-113 Degrees F at the field joint sensors. The maximum voltage supplied to the heaters was 210.9 V. The ICD requirements at 208 V nominal with limits of 191 to 225 V, measured at the SRB Aft skirt feedthrough. The power statistics for each heater are listed in the following table.

<u>Joint</u>	Primary			Secondary		
	Max Voltage <u>vac</u>	Max Current <u>amps</u>	Max Power <u>watts</u>	Max Voltage <u>vac</u>	Max Current <u>amps</u>	Max Power <u>watts</u>
<u>LH</u>						
IGNITER	208.8	2.18	453	Secondary circuits not used.		
FWD FJ	208.8	16.56	3438			
CTR FJ	207.6	16.40	3352			
AFT FJ	207.6	15.84	3255			
<u>RH</u>						
IGNITER	210.0	2.18	455			
FWD FJ	208.8	16.40	3385			
CTR FJ	208.8	16.40	3385			
AFT FJ	208.8	16.80	3454			

The igniter heaters were activated at 095:11:31 GMT (04-05-93 07:31 EST), and were deactivated at the end of the T-9 minute hold which was 096:06:23 GMT (04-06-93 02:23 EST). The total activation time was 18 hours and 52 minutes, and power was applied to the heating elements an average of 55% of that time after the initial warm up. The field joint heaters were activated at 095:18:00 GMT (04-05-93 14:00 EST), and were deactivated at about T-1 minutes which was 096:06:31 GMT (04-06-93 02:31 EST). The total activation time was 12 hours and 31 minutes, and power was applied to the heating elements an average of 24% of the time after the initial warm up.

## 6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

## 6.5 Integrated Testing and Launch (continued)

### 6.5.5 Countdown To Launch (continued)

At T-1.5 hours in the countdown the OPT 75% SIM was conducted. All OPT readings were within required limits as shown below.

<u>OPT S/N</u>	<u>MEASUREMENT ID NUMBER</u>	<u>75% SIM. psia</u>	<u>AMBIENT psia</u>
LH			
193	B47P1300c	765.8	14.6
250	B47P1301c	763.8	12.6
192	B47P1302c	763.8	10.6
RH			
067R3	B47P2300c	763.8	12.6
069R2	B47P2301c	755.8	6.7
070R2	B47P2302c	761.8	12.6

The OMRSD limits are: 75% Sim. 729 to 799 psia.  
Ambient -7 to 33 psia.

The Nozzle/Case Joint temperature range from 78-85 Degree F during the LCC time period. The Aft skirt GN2 purge was initiated at 095:16:33 GMT (04/05 1993 12:33 EDT) at temperature, high flow. The aft skirt purge was activated intermittently during the countdown to maintain the flex bearing aft end ring temperatures above 90 F.

The case acreage temperatures for the LCC instruments located at 270 degree range from 64 to 82 Degree F.

The ambient temperature was 60 to 82 Degrees F during the Terminal countdown.

The S&A rotation times at T-5 minutes were:

There were no Launch Commit Criteria (LCC) violations from RSRM hardware during the countdown activities.

6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

6.5 Integrated Testing and Launch (continued)

6.5.5 Countdown To Launch (continued)

Countdown No. 2

All T and L times in this section are based on the scheduled launch time 05:29 FBT (1:29 AM EDT) on April 8, 1993.

The prediction of the propellant Mean Bulk Temperature (PMBT) prepared at L-2 days was 68 Degrees F. The post flight assessment indicates the actual PMBT at the time of launch was 66 Degrees F.

At approximately L-18 hours the igniter heaters were powered up. The field joint heaters were powered up at approximately L-11.5 hours. All heaters operated properly on their primary circuits providing operational temperature ranges of 96-101 Degrees F at the igniter joint sensors and 89-111 Degrees F at the field joint sensors. The maximum voltage supplied to heaters was 210.0 V. The ICD requirement is 208 V nominal with limits of 191 to 225 V, measured at the SRB Aft Skirt Feedthrough. The power statistics for each heater are listed in the following table.

Joint	Primary			Secondary		
	Max Voltage vac	Max Current amps	Max Power watts	Max Voltage vac	Max Current amps	Max Power watts
<u>LH</u>						
IGNITER	208.8	2.16	451	Secondary circuits not used.		
FWD FJ	208.8	16.56	3438			
CTR FJ	207.4	16.24	3316			
AFT FJ	207.6	15.84	3255			
<u>RH</u>						
IGNITER	210.0	2.16	454			
FWD FJ	208.8	16.32	3317			
CTR FJ	208.8	16.16	3319			
AFT FJ	208.8	16.62	3415			

The igniter heaters were activated at 097:11:31 GMT (4/07/93 EDT), and were deactivated at the end of the T-9 minute hold which was 098:05:19 GMT (4/08/93 01:19 EDT). The total activation time was 18 hours and 48 minutes, and power was applied to the heating elements an average of 57% of that time after the initial warm up. The field joint heaters were activated at 097:17:49 GMT (4/7/93 13:49 EDT), and were deactivated at about T-1 min which was 098:05:28 GMT (4/8/93 01:28 EDT). The total activation time was 11 hours and 39 minutes, and power was applied to the heating elements an average of 40% of the time after the initial warm up.

6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

6.5 Integrated Testing and Launch (continued)

6.5.5 Countdown To Launch (continued)

At about T-1.5 hr in the countdown the OPT 75% SIM was conducted. All OPT readings were within required limits as shown below.

<u>OPT S/N</u>	<u>MEASUREMENT ID NUMBER</u>	<u>75% SIM. psia</u>	<u>AMBIENT psia</u>
LH			
193	B47P1300c	765.8	14.6
250	B47P1301c	763.8	10.6
192	B47P1302c	763.8	10.6
RH			
067R3	B47P2300c	763.8	12.6
069R2	B47P2301c	753.8	6.7
070R2	B47P2302c	761.8	12.6

The OMRSD limits are: 75% Sim. 729 to 799 psia.  
Ambient -7 to 33 psia.

The Nozzle/Case Joint temperature range from 77 to 83 F during the LCC time period. The Flex Bearing Mean Bulk Temperature (FBMBT) at the time of launch was 78 Degrees F. The Aft Skirt GN2 purge was initiated at 097:15:18 BMT (4/7/93 11:18 EDT) at high temperature, high flow. Total aft skirt purge activation time including Countdown #1 was 28 hours 37 minutes.

The case acreage temperatures for the LCC instruments located at 270 degrees ranged from 64 to 69 Degree F.

The ambient temperature was 65 to 69 Degree F during the Terminal countdown and was 66 F at launch time.

The S&A rotation times at T-5 minutes were:

Left Hand S&A: ARM: 0.845 sec.      Right Hand S&A: ARM: 0.726 sec.

There were no Launch Commit Criteria (LCC) violations from RSRM hardware during the countdown activities.

STS-56 was successfully launched on Thursday, 5 April 1993 at 098:06:28:59.986 GMT which was 01:29 EDT.

7.0 RECOMMENDATIONS

No recommendations for flight hardware processing improvement are noted.

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA

RSRM: 031      B10: 58      STS: 56

8.1 Date Segments Received at KSC

	<u>AFT</u>	<u>AFT CENTER</u>	<u>FWD CENTER</u>	<u>FORWARD</u>
LH: DATE	10/09/92	11/18/92	11/18/92	11/18/92
P/N:	1U76957-06	1U76792-05	1U75791-05	1U76790-13
S/N:	0000005	0000006	0000006	0000006
R/R CAR #	CSXT600514	CSXT600512	FEC101	KCS-710016
RH: DATE	11/18/92	12/01/92	12/01/92	12/10/92
P/N:	1U76958-09	1U76792-06	1U76791-06	1U76790-14
S/N:	0000003	00000006	0000006	0000006
R/R CAR #	MP-859029	UP-50021	UP-50025	KCS-710032

8.2 Segment Off-load Dates

LH:	11/09/92	12/07/92	12/03/92	12/01/92
RH:	11/25/92	01/09/92	01/05/92	11/12/92

8.3 Date Exit Cone Received at KSC

	<u>DATE</u>	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>R/R CAR #</u>
LH:	10/09/92	1U76970-01	0000007	UP-57952
RH:	10/09/92	1U76970-02	0000015	UP-57952

8.4 Off-load Date of Exit Cone

LH:	11/18/92	RH:	11/18/92
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8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.5 Mate Aft Segment to Aft Skirt (LH/RH)

**LH AFT**

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>DATE</u>
	1U76957-06	0000005	11/11/92
<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NO.</u>	<u>QTY</u>
PINS	1U51055-02	ECL-0001 ECL-0003	88 89
<u>LOCATION</u>	<u>DATE</u>	<u>TIME</u>	<u>DEGREE</u>
FIRST PIN:	11/11/92	09:21	178
LAST PIN:	11/11/92	07:33	324

AFT SEGMENT/SKIRT CLOSEOUT:

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NUMBER</u>
FIELD JOINT KIT (STRAP)	1U75345-07	0000173
INSULATOR	1U50746-03	0000138
ADHESIVE	STW5-3837	ECL-0021

**RH AFT**

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>DATE</u>
	1U76958-09	0000003	11/30/92
<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NO.</u>	<u>QTY</u>
PINS	1U51055-02	ECL-0003	177
<u>LOCATION</u>	<u>DATE</u>	<u>TIME</u>	<u>DEGREE</u>
FIRST PIN:	11/30/92	10:37	214
LAST PIN:	11/30/92	10:58	82

AFT SEGMENT/SKIRT CLOSEOUT:

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NUMBER</u>
FIELD JOINT KIT (STRAP)	1U75345-07	00000161
INSULATOR	1U50746-03	00000138
ADHESIVE	STW5-3837	LOT0021

**8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)**

RSRM: 031 BIO: 58 STS: 56

**8.6 LH Stiffener Ring Installation**

<u>LOCATION</u>	<u>PART NO.</u>	<u>SERIAL/LOT NUMBER</u>	<u>DATE</u>
FWD RING, INSUL	1U52501-01	0000300	12/09/92
FWD RING	1U52502-04	0000190	12/09/92
FWD RING, INSUL	1U52501-04	0000198	12/09/92
FWD RING	1U52502-07	0000141	12/09/92
FWD RING, INSUL	1U52501-05	0000199	12/09/92
FWD RING	1U52502-08	0000842R	12/09/92
BOLT	1U52510-01	ECL-0016 ECL-0021	12/09/92
MID RING, INSUL	1U52501-01	0000299	12/08/92
MID RING	1U52502-04	0000087R1	12/08/92
MID RING, INSUL	1U52501-04	0000199	12/08/92
MID RING	1U52502-07	0000140	12/08/92
MID RING, INSUL	1U52501-05	0000198	12/08/92
MID RING	1U52502-08	0000238	12/08/92
BOLT	1U52510-01	ECL-0021	12/08/92
AFT RING, INSUL	1U52501-01	0000302	12/08/92
AFT RING	1U52502-04	0000049R3	12/08/92
AFT RING, INSUL	1U52501-04	0000201	12/08/92
AFT RING	1U52502-07	0000171	12/08/92
AFT RING, INSUL	1U52501-05	0000201	12/08/92
AFT RING	1U52502-08	0000242	12/08/92
BOLT	1U52510-01	ECL-0021	12/08/92

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.7 RH Stiffener Ring Installation

<u>LOCATION</u>	<u>PART NO.</u>	<u>SERIAL/LOT NUMBER</u>	<u>DATE</u>
FWD RING, INSUL	1U52501-01	0000301	12/09/92
FWD RING	1U52502-04	0000067	12/09/92
FWD RING, INSUL	1U52501-04	0000200	12/09/92
FWD RING	1U52502-07	0000168	12/09/92
FWD RING, INSUL	1U52501-05	0000200	12/09/92
FWD RING	1U52502-08	0000241	12/09/92
BOLT	1U52510-01	ECL-0016 ECL-0021	12/09/92
MID RING, INSUL	1U52501-01	0000298	12/08/92
MID RING	1U52502-04	0000184	12/08/92
MID RING, INSUL	1U52501-04	0000197	12/08/92
MID RING	1U52502-07	0000137	12/08/92
MID RING, INSUL	1U52501-05	0000196	12/08/92
MID RING	1U52502-08	0000176	12/08/92
BOLT	1U52510-01	ECL-0021	12/08/92
AFT RING, INSUL	1U52501-01	0000297	12/08/92
AFT RING	1U52502-04	0000177	12/08/92
AFT RING, INSUL	1U52501-04	0000196	12/08/92
AFT RING	1U52502-07	0000136	12/08/92
AFT RING, INSUL	1U52501-05	0000197	12/08/92
AFT RING	1U52502-08	0000177	12/08/92
BOLT	1U52510-01	ECL-0021	12/08/92

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.8 LH Splice Plate Installation

FORWARD STIFFENER RING

<u>ITEM</u>	<u>LOCATION</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
PLATE	210	1U52508-01	0000573
BOLT, SHOULDER	210	1U52734-02	ECL-0021
PLATE	330	1U52508-01	0000569
BOLT, SHOULDER	330	1U52734-02	ECL-0021
SPLICE PLATE	210	1U52506-02	0000573
BOLT, SHOULDER	210	1U52734-03	ECL-0004
SPLICE PLATE	330	1U52506-02	0000574
BOLT, SHOULDER	330	1U52734-03	ECL-0004
SPLICE PLATE	90	1U52506-03	0000192
BOLT, SHOULDER	90	1U52734-04	ECL-00005
ADAPT PLATE, UPPER	90	1U77164-01	0000195
ADAPT PLATE, LOWER	90	1U77164-01	0000194
BOLT, SHOULDER	90	1U52734-01	ECL-0004

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.8 LH Splice Plate Installation (continued)

CENTER STIFFENER RING

<u>ITEM</u>	<u>LOCATION</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
PLATE	210	1U52508-01	0000570
BOLT, SHOULDER	210	1U52734-02	ECL-0019
PLATE	330	1U52508-01	0000568
BOLT, SHOULDER	330	1U52734-02	ECL-0019
SPLICE PLATE	210	1U52506-02	0000569
BOLT, SHOULDER	210	1U52734-03	ECL-0012
SPLICE PLATE	330	1U52506-02	0000572
BOLT, SHOULDER	330	1U52734-03	ECL-0012
SPLICE PLATE	90	1U52506-03	0000194
BOLT, SHOULDER	90	1U52734-04	ECL-0005
ADAPT PLATE, UPPER	90	1U77164-01	0000188
ADAPT PLATE, LOWER	90	1U77164-01	0000191
BOLT, SHOULDER	90	1U52734-01	ECL-0004

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.8 LH Splice Plate Installation (continued)

AFT STIFFENER RING

<u>ITEM</u>	<u>LOCATION</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
PLATE	210	1U52508-01	0000572
BOLT, SHOULDER	210	1U52734-02	ECL-0019
PLATE	330	1U52508-01	0000571
BOLT, SHOULDER	330	1U52734-02	ECL-0019
SPLICER PLATE	210	1U52506-02	0000575
BOLT, SHOULDER	210	1U52734-03	ECL-0012
SPLICER PLATE	330	1U52506-02	0000578
BOLT, SHOULDER	330	1U52734-03	ECL-0012
SPLICER PLATE	90	1U52506-03	0000196
BOLT, SHOULDER	90	1U52734-04	ECL-0005
ADAPT PLATE, UPPER	90	1U77164-01	0000190
ADAPT PLATE, LOWER	90	1U77164-01	0000192
BOLT, SHOULDER	90	1U52734-01	ECL-0004

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.9 RH Splice Plate Installation

FORWARD STIFFENER RING

<u>ITEM</u>	<u>LOCATION</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
PLATE	210	1U52508-01	0000575
BOLT, SHOULDER	210	1U52734-02	ECL-0019
PLATE	330	1U52508-01	0000578
BOLT, SHOULDER	330	1U52734-02	ECL-0019
SPLICE PLATE	210	1U52506-02	0000570
BOLT, SHOULDER	210	1U52734-03	ECL-0004
SPLICE PLATE	330	1U52506-02	0000571
BOLT, SHOULDER	330	1U52734-03	ECL0004
SPLICE PLATE	90	1U52506-03	00000571
BOLT, SHOULDER	90	1U52734-04	ECL-0004
ADAPT PLATE, UPPER	90	1U77164-01	0000186
ADAPT PLATE, LOWER	90	1U77164-01	LOT0005
BOLT, SHOULDER	90	1U52734-01	ECL-0004

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.9 RH Splice Plate Installation (continued)

CENTER STIFFENER RING

<u>ITEM</u>	<u>LOCATION</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
PLATE	210	1U52508-01	0000567
BOLT, SHOULDER	210	1U52734-02	ECL-0019
PLATE	330	1U52508-01	0000574
BOLT, SHOULDER	330	1U52734-02	ECL-0019
SPLICE PLATE	210	1U52506-02	0000577
BOLT, SHOULDER	210	1U52734-03	ECL-0005
SPLICE PLATE	330	1U52506-02	0000568
BOLT, SHOULDER	330	1U52734-03	ECL-0005
SPLICE PLATE	90	1U52506-03	0000188
BOLT, SHOULDER	90	1U52734-04	ECL-0005
ADAPT PLATE, UPPER	90	1U77164-01	0000187
ADAPT PLATE, LOWER	90	1U77164-01	0000193
BOLT, SHOULDER	90	1U52734-01	ECL-0004

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.9 RH Splice Plate Installation (continued)

AFT STIFFENER RING

<u>ITEM</u>	<u>LOCATION</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
PLATE	210	1U52508-01	0000576
BOLT, SHOULDER	210	1U52734-02	ECL-0019
PLATE	330	1U52508-01	0000577
BOLT, SHOULDER	330	1U52734-02	ECL-0019
SPLICE PLATE	210	1U52506-02	0000576
BOLT, SHOULDER	210	1U52734-03	ECL-0012
SPLICE PLATE	330	1U52506-02	0000574
BOLT, SHOULDER	330	1U52734-03	ECL-0012
SPLICE PLATE	90	1U52506-03	0000187
BOLT, SHOULDER	90	1U52734-04	ECL-0005
ADAPT PLATE, UPPER	90	1U77164-01	0000187
ADAPT PLATE, LOWER	90	1U77164-01	0000189
BOLT, SHOULDER	90	1U52734-01	ECL-0004

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.10 Exit Cone Installation (LH/RH)

LH:

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>	<u>EXP DATE</u>
EXIT CONE	1U76970-01	0000007	11/23/92	N/A
GREASE	1U51916-09	ECL-0072	11/23/92	8/20/94
O-RING, PRI	1U75801-03	0000364	11/23/92	12/15/92
O-RING, SEC	1U75801-04	0000364	11/23/92	1/07/93
STW5-2813	MIL-S-8802	ECL-165 ECL-166	11/25/92 11/25/92	1/01/93 3/04/93
BOLT	1U75756-10	ECL-0017	11/23/92	N/A

RH:

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>	<u>EXP DATE</u>
EXIT CONE	1U76970-02	0000015	12/10/92	N/A
GREASE	1U51916-09	ECL-0072	12/10/92	8/20/94
O-RING, PRI	1U75801-03	0000366	12/11/92	7/19/93
O-RING, SEC	1U75801-04	0000367	12/11/92	8/20/94
STW5-2813	MIL-S-8802	ECL-00165	12/15/92	1/01/93
BOLT	1U75756-10	ECL-0014 ECL-0017	12/15/92 12/15/92	N/A

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.11 Exit Cone Leak Check (LH/RH)

LH DATE: 11/24/92

PRIMARY TO		ALLOWED	ACTUAL RATE
SECONDARY	83 PSIG DECAY LEAK RATE	.029	0.0025 SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	0.0003 SCCS

P/S PRINTOUT PLACED IN DATA BOOK BY: BOB HILLARD

270 DEGREE LEAK CHECK PORT

ITEM	PART NO.	LOT NO.
PLUG	1U50159-02	ECL-0019
O-RING	1U50228-25	ECL-0067
GREASE	1U51916-09	ECL-0072

270 DEGREE PLUG INSTALLATION VERIFIED BY: BOB HILLARD

RH DATE: 12/15/92

PRIMARY TO		ALLOWED	ACTUAL RATE
SECONDARY	83 PSIG DECAY LEAK RATE	.029	0.000889 SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	0.000363 SCCS

P/S PRINTOUT PLACED IN DATA BOOK BY: JEFF COOK

270 DEGREE LEAK CHECK PORT

ITEM	PART NO.	LOT NO.
PLUG	1U50159-02	ECL-0019
O-RING	1U50228-25	ECL-0067
GREASE	1U51916-09	ECL-0072

270 DEGREE PLUG INSTALLATION VERIFIED BY: JEFF COOK

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031

BIO: 58

STS: 56

8.12 LH Field Joint Mate

LH AFT FIELD JOINT MATE (2nd attempt)

SINE BAR DATA PLACED IN DATA BOOK BY: RAY HASKELL

AFT BOOSTER CLEVIS DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0069	5/14/94	1/19/93 ,10:17
O-RING, PRI	1U75801-01	0001164	2/21/93	1/19/93 ,14:22
O-RING, SEC	1U75801-01	0001158	2/20/93	1/19/93 ,14:10
J-SEAL ADH.	STW5-3479	ECL-0037	1/31/93	1/19/93 ,15:26

AFT CENTER TANG DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0069 ECL-0075	6/14/93 1/10/93	1/19/93 ,12:10 1/19/93 ,12:10
V-2 FILLER	STW3-3353	ECL-0018	N/A	1/19/93 ,12:40
O-RING, CAP	1U75801-02	0000515	5/24/93	1/19/93 ,12:45
J-SEAL ADH.	STW5-3479	ECL-0037	1/31/93	1/19/93 ,13:45

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.12 LH Field Joint Mate (continued)

LH AFT FIELD JOINT MATE (continued)

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PINS	1U51055-12	ECL0040 ECL0017 ECL0008	95 53 29

	<u>DATE</u>	<u>TIME</u>	<u>DEGREE LOCATION</u>
FIRST PIN:	1/19/93	20:53	358
LAST PIN:	1/19/93	21:03	172

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PIN RETAINER	1U51899-12	ECL-0009 ECL-0012 ECL-0030	1 29 147

DASH NO. OF WEDGE USED (IF ANY): N/A

DEGREE LOCATIONS USED AT: N/A

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>
RETAINER BAND	1U82840-02	0001850	0001838	0001855
BAND JOINT LOCATIONS (DEG):		30-150	150-270	270-30

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.12 LH Field Joint Mate (continued)

LH CENTER FIELD JOINT MATE

SINE BAR DATA PLACED IN DATA BOOK BY: RAY HASKELL

AFT CENTER CLEVIS DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0072	8/20/94	1/12/93, 13:30
O-RING, PRI	1U75801-01	0001207	4/15/93	1/12/93, 22:10
O-RING, SEC	1U75801-01	0001208	5/18/93	1/21/93, 22:30
J-SEAL ADH.	STW5-3479	ECL-0038	3/23/93	1/21/93, 23:00

FORWARD CENTER TANG DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0072	4/20/94	2/21/94, 14:15
V-2 FILLER	STW3-3353	ECL-0018	N/A	1/21/93, 15:00
O-RING, CAP	1U75801-02	0000501	* 2/03/93	1/21/93, 16:05
J-SEAL ADH.	STW5-3479	ECL-0038	3/23/93	1/21/93, 17:00

REMARKS: The Primary & Secondary O-Rings initially issued were removed from the level for suspect flat spots on the radius, PR SB-BIO58L-0003.

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.12 LH Field Joint Mate (continued)

LH CENTER FIELD JOINT MATE (continued)

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PINS	1U51055-12	ECL-0001 ECL-0006 ECL-0007 ECL-0017	001 120 55 001

	<u>DATE</u>	<u>TIME</u>	<u>DEGREE LOCATION</u>
FIRST PIN:	1/22/93	9:21	92
LAST PIN:	1/22/93	9:40	30

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PIN RETAINER	1U51899-13	ECL-0001 ECL-0014 ECL-0020	35 132 10

DASH NO. OF WEDGE USED (IF ANY): -01

DEGREE LOCATIONS USED AT: 24-40, 354-320

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>
RETAINER BAND	1U82840-02	0001840	00001839	0001847
BAND JOINT LOCATIONS (DEG):	30-150	150-270	270-30	

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.12 LH Field Joint Mate (continued)

LH FORWARD FIELD JOINT MATE

SINE BAR DATA PLACED IN DATA BOOK BY: R. HASKELL

FORWARD CENTER CLEVIS DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0072	8/20/944	1/26/93 02:15
O-RING, PRI	1U75801-01	0001165	2/21/93	1/26/93 08:17
O-RING, SEC	1U75801-01	0001156	2/19/93	1/26/93 08:08
J-SEAL ADH.	STW5-3479	ECL-0030	3/23/93	1/26/93 09:40

FORWARD TANG DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0027	8/20/94	1/26/93, 04:00
V-2 FILLER	STW3-3353	ECL-0018	N/A	1/26/93, 04:55
O-RING, CAP	1U75801-02	0000502	1/30/93	1/26/93, 05:10
J-SEAL ADH.	STW5-3479	ECL-0030	3/23/93	1/26/93, 07:00

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.12 LH Field Joint Mate (continued)

LH FORWARD FIELD JOINT MATE (continued)

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PINS	1U51055-12	ECL-0001 ECL-0004 ECL-0008 ECL-0013 ECL-0018 ECL-0025	67 1 11 1 1 96

	<u>DATE</u>	<u>TIME</u>	<u>DEGREE LOCATION</u>
FIRST PIN:	1/26/93	14:35	232
LAST PIN:	1/26/93	14:49	344

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PIN RETAINER	1U51899-11	ECL-0006	177

DASH NO. OF WEDGE USED (IF ANY): N/A

DEGREE LOCATIONS USED AT: N/A

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>
RETAINER BAND	1U82840-02	0001848	0001842	0001853
BAND JOINT LOCATIONS (DEG):	30-150	150-270	270-30	

LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031

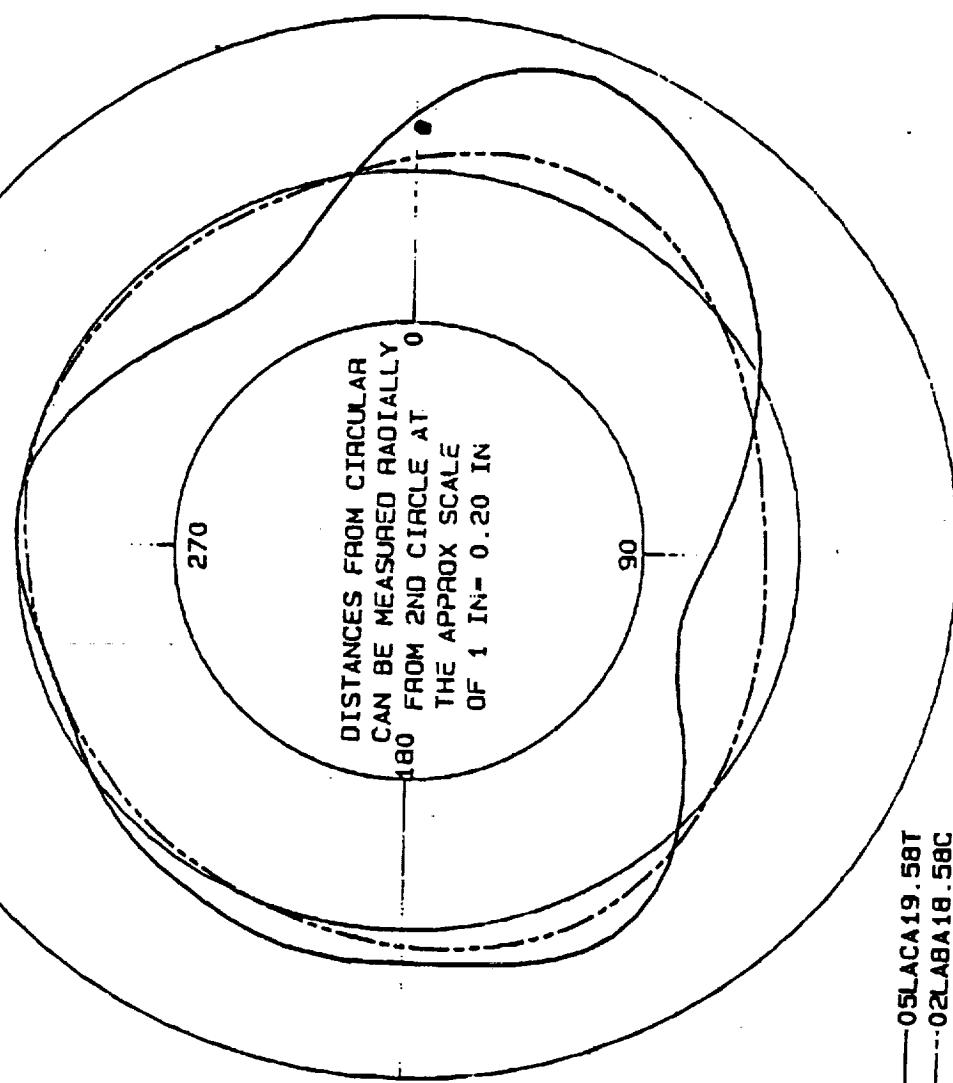
BIO: 58

STS: 56

8.13 LH Sine Bar Data

ANGLE DIFF	DIFF IN DELTAS FROM CIRC	ANGLE DIFF	DIFF IN DELTAS FROM CIRC
0	0.057	320	-0.099
10	0.107	330	-0.098
20	0.121	340	-0.068
30	0.104	350	-0.011
40	0.079		
50	0.056		
60	0.030		
70	-0.003		
80	-0.038		
90	-0.071		
100	-0.099		
110	-0.105		
120	-0.080		
130	-0.035		
140	0.009		
150	0.035		
160	0.035		
170	0.023		
180	0.023		
190	0.036		
200	0.042		
210	0.035		
220	0.029		
230	0.021		
240	0.005		
250	-0.003		
260	0.005		
270	0.013		
280	0.002		
290	-0.024		
300	-0.052		
310	-0.080		

LAC TANG VS LAB CLEVIS B1058C TAB XFER-AISLE 1-19-93  
0-180-151K 90-270-163K SB S/N 002 0030HRS  
\* Delta difference greater than 0.125



05LACA19.58T  
02LABA18.58C

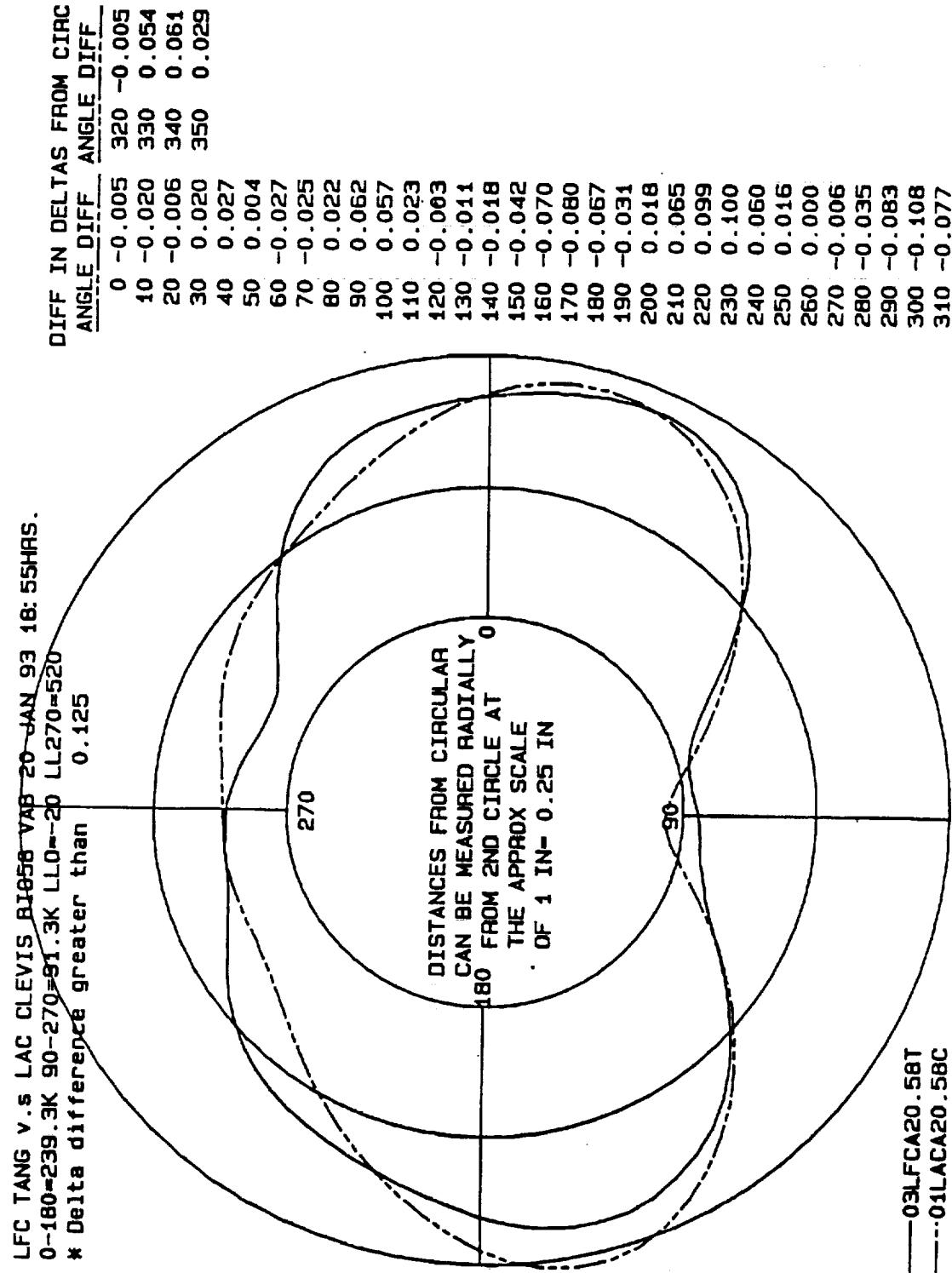
LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031

BIO: 58

STS: 56

8.13 LH Sine Bar Data (continued)



LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031

BIO: 58

STS: 56

8.13 LH Sine Bar Data (continued)

DIFF IN DELTAS FROM CJAC	
ANGLE DIFF	ANGLE DIFF
0	0 0.063 320 0.020
10	0 0.014 330 0.048
20	-0.022 340 0.075
30	-0.036 350 0.087
40	-0.042
50	-0.051
60	-0.056
70	-0.044
80	-0.019
90	0.003
100	0.011
110	0.013
120	0.022
130	0.037
140	0.044
150	0.033
160	0.008
170	-0.012
180	-0.017
190	-0.008
200	0.005
210	0.005
220	-0.012
230	-0.035
240	-0.043
250	-0.023
260	0.005
270	0.010
280	-0.009
290	-0.032
300	-0.033
310	-0.009

LFS TANG VS LFC CLEVIS BIO58 VAB XFER AISLE 25 JAN 93  
0-180=173.8K 90-270=186.7K, LL0=-34, LL270=-370 10:45  
\* Delta difference greater than 0.125

DISTANCES FROM CIRCULAR  
CAN BE MEASURED RADIALLY  
180° FROM 2ND CIRCLE AT  
THE APPROX SCALE  
OF 1 IN= 0.20 IN

REVISION

DOC NO. TWR-63641 VOL  
SEC PAGE

5787  
---01LFS25.58C  
---01LFC25.58C

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.14 RH Field Joint Mate

RH AFT FIELD JOINT MATE

SINE BAR DATA PLACED IN DATA BOOK BY: MICHAEL GOODWIN

AFT BOOSTER CLEVIS DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0072	8/20/94	1/29/93 ,04:55
O-RING, PRI	1U75801-01	0001213	5/18/93	1/29/93 ,05:10
O-RING, SEC	1U75801-01	0001209	5/25/93	1/29/93 ,05:23
J-SEAL ADH.	STW5-3479	ECL-0037	1/31/93	1/29/93 ,22:30

AFT CENTER TANG DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0072	8/20/94	1/29/93 ,02:15
V-2 FILLER	STW3-3353	ECL-0018	N/A	1/29/93 ,02:45
O-RING, CAP	1U75801-02	0000513	5/20/93	1/29/93 ,03:05
J-SEAL ADH.	STW5-3479	ECL-0038	3/23/93	1/29/93 ,04:42

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.14 RH Field Joint Mate (continued)

RH AFT FIELD JOINT MATE (continued)

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PINS	1U51055-12	ECL-0001 ECL-0002 ECL-0012 ECL-0016	66 36 22 53

	<u>DATE</u>	<u>TIME</u>	<u>DEGREE LOCATION</u>
FIRST PIN:	1/29/93	10:53	20
LAST PIN:	1/29/93	11:08	92

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PIN RETAINER	1U51899-12	ECL-0023	177

DASH NO. OF WEDGE USED (IF ANY): N/A

DEGREE LOCATIONS USED AT: N/A

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>
RETAINER BAND	1U82840-02	0001845	0001851	0001363
BAND JOINT LOCATIONS (DEG):		30-150	150-270	270-30

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.14 RH Field Joint Mate (continued)

RH CENTER FIELD JOINT MATE

SINE BAR DATA PLACED IN DATA BOOK BY: MIKE GOODWIN 2/12/90

AFT CENTER CLEVIS DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0072	8/20/94	1/30/93 ,19:10
O-RING, PRI	1U75801-01	0001214	5/30/93	1/30/93 ,22:05
O-RING, SEC	1U75801-01	0001212	5/16/93	1/30/93 ,21:55
J-SEAL ADH.	STW5-3479	ECL-0038	3/23/93	1/30/93 ,22:30

FORWARD CENTER TANG DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0072	8/20/94	1/30/93 ,20:20
V-2 FILLER	STW3-3353	ECL-0018	N/A	1/30/93 ,20:45
O-RING, CAP	1U75801-02	0000512	5/20/93	1/30/93 ,21:00
J-SEAL ADH.	STW5-3479	ECL-0038	3/23/93	1/30/93 ,21:40

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031

BIO: 58

STS: 56

8.14 RH Field Joint Mate (continued)

RH CENTER FIELD JOINT MATE (continued)

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PINS	1U51055-12	ECL-0008 ECL-0025 ECL-0029	171 5 1

	<u>DATE</u>	<u>TIME</u>	<u>DEGREE LOCATION</u>
FIRST PIN:	1/31/93	03:45	86
LAST PIN:	1/31/93	03:57	170

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PIN RETAINER	1U51899-12	ECL-0023	177

DASH NO. OF WEDGE USED (IF ANY): N/A

DEGREE LOCATIONS USED AT: N/A

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>
RETAINER BAND	1U82840-02	0001969	0002012	0001993
BAND JOINT LOCATIONS (DEG):		30-150	150-270	270-30

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.14 RH Field Joint Mate (continued)

**RH FORWARD FIELD JOINT MATE**

SINE BAR DATA PLACED IN DATA BOOK BY: MIKE NOWLING

**FORWARD CENTER CLEVIS DATA**

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0075	3/10/95	2/04/93, 22:20
O-RING, PRI	1U75801-01	0001206	5/20/93	2/05/93, 00:52
O-RING, SEC	1U75801-01	0001215	6/30/93	2/05/93, 00:44
J-SEAL ADH.	STW5-3479	ECL-0038	5/23/93	2/05/93, 01:50

**FORWARD TANG DATA**

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0075	5/05/95	2/04/93, 20:30
V-2 FILLER	STW3-3353	ECL-0018	N/A	2/04/93, 22:30
O-RING, CAP	1U75801-02	0000514	5/24/93	2/04/93, 00:25
J-SEAL ADH.	STW5-3479	ECL-0038	5/23/93	2/05/93, 00:25

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031

BIO: 58

STS: 56

8.14 RH Field Joint Mate (continued)

RH FORWARD FIELD JOINT MATE (continued)

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PINS	1U51055-12	ECL-0025	177

	<u>DATE</u>	<u>TIME</u>	<u>DEGREE LOCATION</u>
FIRST PIN:	2/05/93	6:46	88
LAST PIN:	2/05/93	6:56	350

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PIN RETAINER	1U51899-12	ECL-0023 ECL-0033	88 89

DASH NO. OF WEDGE USED (IF ANY): N/A

DEGREE LOCATIONS USED AT: N/A

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>
RETAINER BAND	1U82840-02	0001857	0001859	0001844
BAND JOINT LOCATIONS (DEG):		30-150	150-270	270-30

LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031

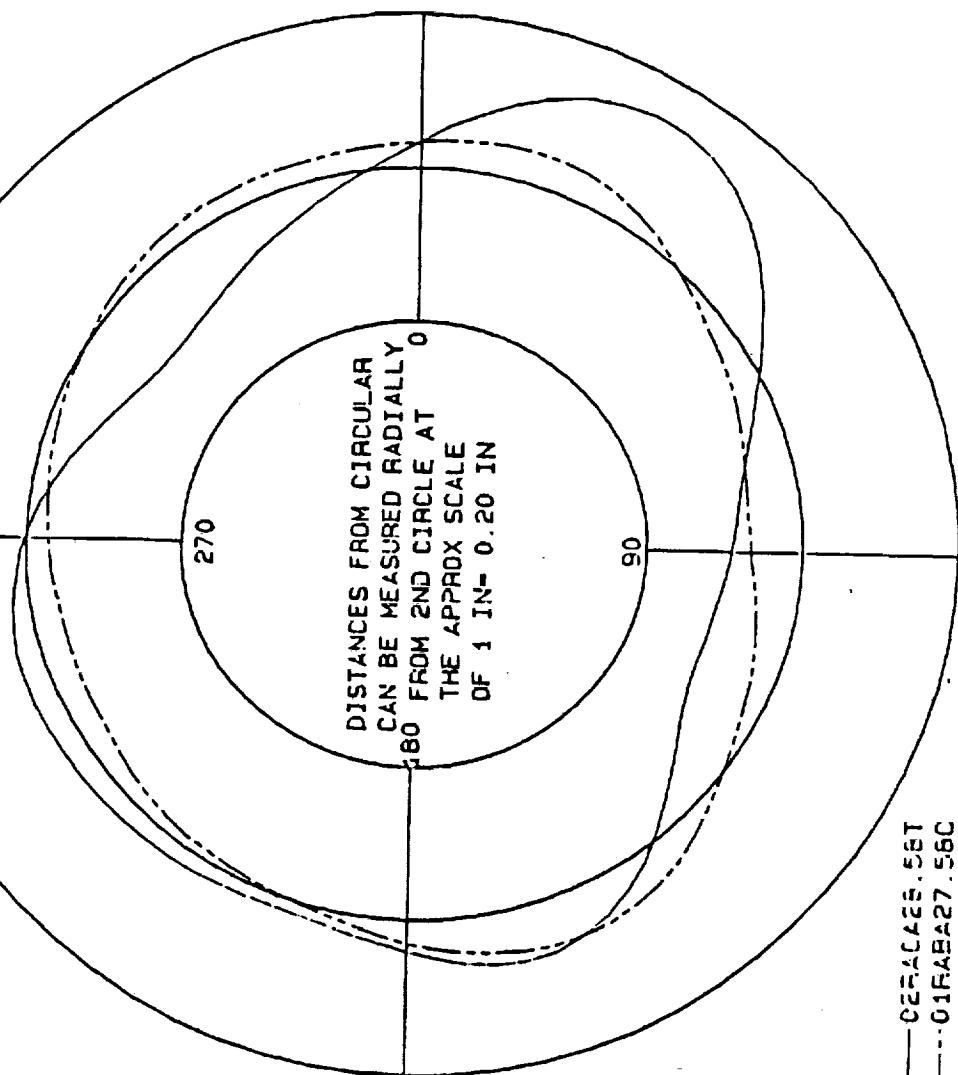
BIO: 58

STS: 56

8.15 RH Sine Bar Data

ANGLE DIFF	DIFF IN DELTAS FROM CIRC	ANGLE DIFF	DIFF IN DELTAS FROM CIRC
0	0.000	320	-0.108
10	0.047	330	-0.092
20	0.089	340	-0.067
30	0.118	350	-0.037
40	0.125		
50	0.095		
60	0.045		
70	0.007		
80	-0.012		
90	-0.027		
100	-0.050		
110	-0.073		
120	-0.079		
130	-0.070		
140	-0.047		
150	-0.015		
160	0.009		
170	0.014		
180	0.011		
190	0.011		
200	0.018		
210	0.029		
220	0.041		
230	0.054		
240	0.067		
250	0.070		
260	0.055		
270	0.030		
280	-0.007		
290	-0.052		
300	-0.089		
310	-0.109		

FAC TANG VS RAB CLEVIS BIGESSR VAP AFTER AISLE 1-28-53  
O-160=46..5K 90-270=275.2K LL O=1:6 LL270=57.0505  
\* Delta difference greater than 0.125



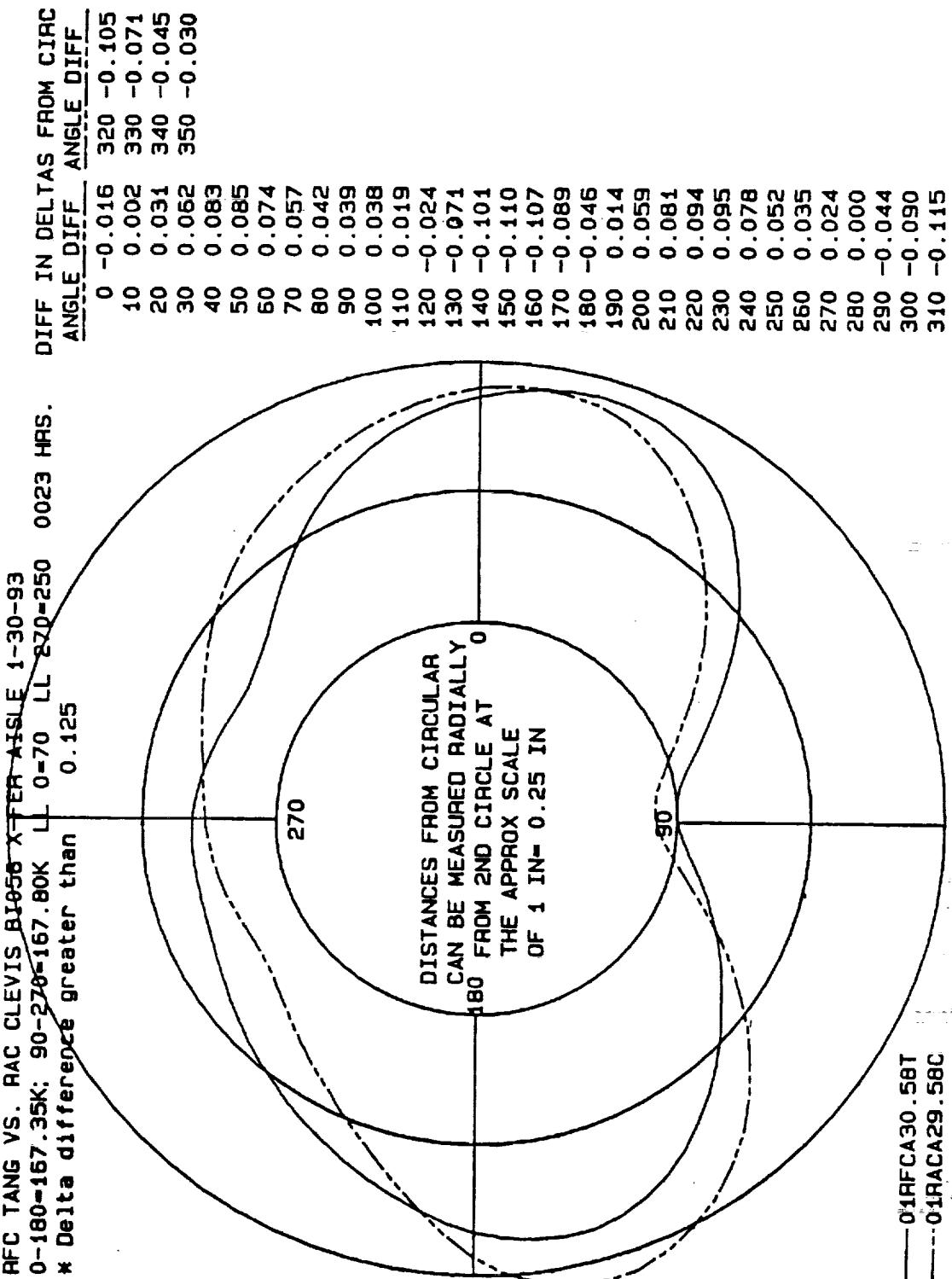
LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031

BIO: 58

STS: 56

8.15 RH Sine Bar Data (continued)



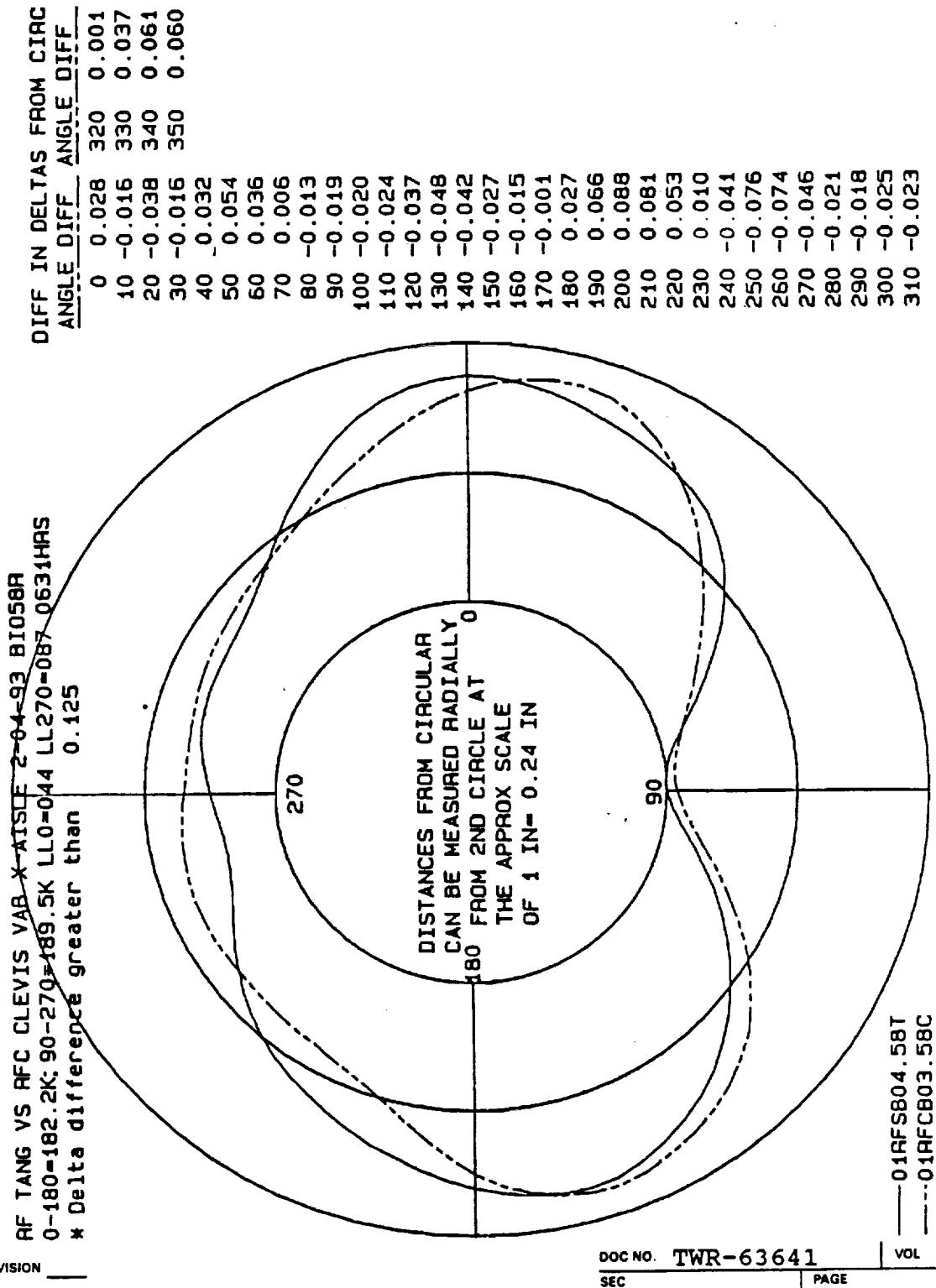
LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031

BIO: 58

STS: 56

8.15 RH Sine Bar Data (continued)



8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.16 LH Joint Leak Checks & 45 Deg Plug

**LH AFT FIELD JOINT**

DATE: 1/22/93

PRIMARY TO		ALLOWED	ACTUAL RATE
SECONDARY	1000 PSIG DECAY LEAK RATE	.10	0.0177 SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	0.00003 SCCS

DATE: 1/22/93

PRIMARY TO	100 PSIG	DECAY LEAK RATE	ALLOWED	ACTUAL RATE
		PRESS RISE RATE		
BARRIER	30 PSIG	DECAY LEAK RATE	.037	0.0048 SCCS
		PRESS RISE RATE	.037	0.0005 SCCS
CAVITY	30 PSIG	DECAY LEAK RATE	.0082	0.0006 SCCS
		PRESS RISE RATE	.0082	0.0003 SCCS

PRINTOUT PLACED IN DATA BOOK BY: MIKE NOWLING

DATA DISK RETRIEVED BY: MIKE GOODWIN

45 DEGREE LEAK CHECK PORT

ITEM	PART NO.	LOT NO.
PLUG	1U100269-03	ECL-0020
O-RING	1U50228-15	ECL-0116
GREASE	1U51916-09	ECL-0075

45 DEGREE PLUG INSTALLATION VERIFIED BY: BOB HILLARD

135 DEGREE PLUG INSTALLATION VERIFIED BY: RAY HASKELL

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.16 LH Joint Leak Checks & 45 Deg Plug (continued)

LH CENTER FIELD JOINT

DATE: 1/23/93

PRIMARY TO		ALLOWED	ACTUAL RATE
SECONDARY	1000 PSIG DECAY LEAK RATE	.10	0.01331 SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	-0.00042 SCCS

DATE: 1/23/93

PRIMARY TO	100 PSIG	DECAY LEAK RATE	ALLOWED	ACTUAL RATE
BARRIER		PRESS RISE RATE	.037	0.020254 SCCS
CAVITY	30 PSIG	DECAY LEAK RATE	.0082	0.000466 SCCS
		PRESS RISE RATE	.0082	0.000328 SCCS

PRINTOUT PLACED IN DATA BOOK BY: CHET COOPER

DATA DISK RETRIEVED BY: CHET COOPER

45 DEGREE LEAK CHECK PORT

ITEM	PART NO.	LOT NO.
PLUG	1U100269-03	ECL-0020
O-RING	1U50228-15	ECL-0116
GREASE	1U51916-09	ECL-0072

45 DEGREE PLUG INSTALLATION VERIFIED BY: BOB HILLARD

135 DEGREE PLUG INSTALLATION VERIFIED BY: BOB HILLARD

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.16 LH Joint Leak Checks & 45 Deg Plug (continued)

**LH FORWARD FIELD JOINT**

DATE: 1/27/93

PRIMARY TO		ALLOWED	ACTUAL RATE
SECONDARY	1000 PSIG DECAY LEAK RATE	.10	0.0244 SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	0.000857 SCCS

DATE: 1/27/93

PRIMARY TO	100 PSIG	DECAY LEAK RATE	ALLOWED	ACTUAL RATE
BARRIER		PRESS RISE RATE	.037	0.000306 SCCS
CAVITY	30 PSIG	DECAY LEAK RATE	.0082	0.000165 SCCS
		PRESS RISE RATE	.0082	0.000149 SCCS

PRINTOUT PLACED IN DATA BOOK BY: CHET COOPER

DATA DISK RETRIEVED BY: MIKE GOODWIN

**45 DEGREE LEAK CHECK PORT**

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NO.</u>
PLUG	1U100269-03	ECL-0020
O-RING	1U50228-15	ECL-0116
GREASE	1U51916-09	ECL-0075

45 DEGREE PLUG INSTALLATION VERIFIED BY: CHET COOPER

135 DEGREE PLUG INSTALLATION VERIFIED BY: CHET COOPER

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031

BIO: 58

STS: 56

8.17 RH Joint Leak Checks & 45 Deg Plug

**RH AFT FIELD JOINT**

DATE: 1/31/93

PRIMARY TO		ALLOWED	ACTUAL RATE
SECONDARY	1000 PSIG DECAY LEAK RATE	.10	0.015 SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	-0.000092 SCCS

DATE: 1/31/93

PRIMARY TO		ALLOWED	ACTUAL RATE
BARRIER	100 PSIG	DECAY LEAK RATE	.037
CAVITY	30 PSIG	PRESS RISE RATE	.037
		DECAY LEAK RATE	.0082
		PRESS RISE RATE	.0082

PRINTOUT PLACED IN DATA BOOK BY: B. HILLARD

DATA DISK RETRIEVED BY: M. GOODWIN

**45 DEGREE LEAK CHECK PORT**

ITEM	PART NO.	LOT NO.
PLUG	1U100269-03	ECL-0020
O-RING	1U50228-15	ECL-0116
GREASE	1U51916-09	ECL-0075

45 DEGREE PLUG INSTALLATION VERIFIED BY: R. KRETZ

135 DEGREE PLUG INSTALLATION VERIFIED BY: R. KRETZ

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.17 RH Joint Leak Checks & 45 Deg Plug (continued)

**RH CENTER FIELD JOINT**

DATE: 2/1/93

PRIMARY TO		ALLOWED	ACTUAL RATE
SECONDARY	1000 PSIG DECAY LEAK RATE	.10	0.01893 SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	0.000077 SCCS

DATE: 2/1/93

PRIMARY TO		ALLOWED	ACTUAL RATE
100 PSIG	DECAY LEAK RATE	.037	0.0209 SCCS
BARRIER	PRESS RISE RATE	.037	0.00035 SCCS
CAVITY	30 PSIG	.0082	0.000507 SCCS
	DECAY LEAK RATE	.0082	0.000136 SCCS
	PRESS RISE RATE	.0082	

PRINTOUT PLACED IN DATA BOOK BY: B. HILLARD

DATA DISK RETRIEVED BY: M. GOODWIN

45 DEGREE LEAK CHECK PORT

ITEM	PART NO.	LOT NO.
PLUG	1U100269-03	ECL-0022
O-RING	1U50228-15	ECL-0116
GREASE	1U51916-09	ECL-0069

45 DEGREE PLUG INSTALLATION VERIFIED BY: B. KRETZ

135 DEGREE PLUG INSTALLATION VERIFIED BY: B. DRETTZ

*Thiokol* CORPORATION  
SPACE OPERATIONS

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.17 RH Joint Leak Checks & 45 Deg Plug (continued)

**RH FORWARD FIELD JOINT**

DATE: 2/05/93

PRIMARY TO		ALLOWED	ACTUAL RATE
SECONDARY	1000 PSIG DECAY LEAK RATE	.10	0.0212 SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	-0.00004 SCCS

DATE: 2/05/93

		ALLOWED	ACTUAL RATE
PRIMARY TO	100 PSIG	DECAY LEAK RATE	.037
BARRIER		PRESS RISE RATE	.037
CAVITY	30 PSIG	DECAY LEAK RATE	.0082
		PRESS RISE RATE	.0082

PRINTOUT PLACED IN DATA BOOK BY: J. COOK

DATA DISK RETRIEVED BY: M. GOODWIN

45 DEGREE LEAK CHECK PORT

ITEM	PART NO.	LOT NO.
PLUG	1U100269-03	ECL-0022
O-RING	1U50228-15	ECL-0116
GREASE	1U51916-09	ECL-0075

45 DEGREE PLUG INSTALLATION VERIFIED BY: M. NOWLING

135 DEGREE PLUG INSTALLATION VERIFIED BY: M. NOWLING

*Thiokol* CORPORATION  
SPACE OPERATIONS

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031

BIO: 58

STS: 56

8.18 LH 135 Vent Plug & Leak Check

LH AFT FIELD JOINT 135 DEGREE VENT PORT PLUG LEAK CHECK

ITEM	PART NO.	SERIAL/LOT NO.
GREASE	1U51916-09	ECL-0075
PLUG, BOTTOM	1U76425-01	ECL-0014
PLUG, TOP	1U76425-03	ECL-0021
PLUG, CLOSURE	1U50159-02	ECL-0007
O-RING, PRIMARY	1U50228-44	ECL-0015
O-RING, SECONDARY	1U50228-15	ECL-0116
O-RING, CLOSURE	1U50228-25	ECL-0067

LEAK TEST DATA

1. START TIME (TO THE SECOND): 16:30:00

2. INITIAL ISOLATION PRESSURE: 994.000 PSIG  

$$+ \frac{14.696}{1008.696} = P1$$

3. INITIAL ISOLATION TEMPERATURE: 73.700 DEGREES F  

$$+ \frac{459.7}{533.400} = T1$$

4. STOP TIME (TO THE SECOND): 16:45:00 (MINUTES \* 60)  
 ELAPSED TIME IN SECONDS: 900 = T (PLUS SECONDS)

5. FINAL ISOLATION PRESSURE: 976.000 PSIG  

$$+ \frac{14.696}{990.696} = P2$$

6. FINAL ISOLATION TEMPERATURE: 73.700 DEGREES F  

$$+ \frac{459.7}{533.400} = T2$$

V = 1.4 CALCULATE THE LEAK RATE PER THE FOLLOWING:

$$\text{LEAK RATE} = \frac{579.478 (1.4)}{T} (P1/T1 - P2/T2)$$

LEAK RATE = 0.0304 SCCS

V = 1.4

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.18 LH 135 Vent Plug & Leak Check (continued)

LH CENTER FIELD JOINT 135 DEGREE VENT PORT PLUG LEAK CHECK

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
GREASE	1U51916-09	ECL-0072
PLUG, BOTTOM	1U76425-01	ECL-0014
PLUG, TOP	1U76425-03	ECL-0021
PLUG, CLOSURE	1U50159-02	ECL-0007
O-RING, PRIMARY	1U50228-44	ECL-0015
O-RING, SECONDARY	1U50228-15	ECL-0116
O-RING, CLOSURE	1U50228-25	ECL-0067

LEAK TEST DATA

1. START TIME (TO THE SECOND): 03:57:00

2. INITIAL ISOLATION PRESSURE: 990.000 PSIG  

$$+ \frac{14.696}{1004.696} = P1$$

3. INITIAL ISOLATION TEMPERATURE: 72.300 DEGREES F  

$$+ \frac{459.7}{532.000} = T1$$

4. STOP TIME (TO THE SECOND): 04:12:00 (MINUTES \* 60)  
 ELAPSED TIME IN SECONDS: 900.00 = T (PLUS SECONDS)

5. FINAL ISOLATION PRESSURE: 974.000 PSIG  

$$+ \frac{14.696}{988.696} = P2$$

6. FINAL ISOLATION TEMPERATURE: 72.100 DEGREES F  

$$+ \frac{459.7}{531.800} = T2$$

V = 1.4 CALCULATE THE LEAK RATE PER THE FOLLOWING:

$$\text{LEAK RATE} = \frac{579.478 (1.4)}{T} (P1/T1 - P2/T2)$$

$$\text{LEAK RATE} = 0.126 \text{ SCCS} \quad V = 1.4$$

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.18 LH 135 Vent Plug & Leak Check (continued)

LH FORWARD FIELD JOINT 135 DEGREE VENT PORT PLUG LEAK CHECK

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
GREASE	1U51916-09	ECL-0075
PLUG, BOTTOM	1U76425-01	ECL-0014
PLUG, TOP	1U76425-03	ECL-0021
PLUG, CLOSURE	1U50159-02	ECL-0007
O-RING, PRIMARY	1U50228-44	ECL-0015
O-RING, SECONDARY	1U50228-15	ECL-0116
O-RING, CLOSURE	1U50228-25	ECL-0067

LEAK TEST DATA

1. START TIME (TO THE SECOND): 18:28:00
2. INITIAL ISOLATION PRESSURE: 
$$\begin{array}{r} 990.00 \\ + 14.696 \\ \hline 1004.696 \end{array} = P_1$$
3. INITIAL ISOLATION TEMPERATURE: 
$$\begin{array}{r} 60.900 \\ + 459.7 \\ \hline 520.600 \end{array} = \text{DEGREES F}$$
4. STOP TIME (TO THE SECOND): 18:41:00 (MINUTES \* 60)  
ELAPSED TIME IN SECONDS: 900 = T (PLUS SECONDS)
5. FINAL ISOLATION PRESSURE: 
$$\begin{array}{r} 978.000 \\ + 14.696 \\ \hline 992.696 \end{array} = P_2$$
6. FINAL ISOLATION TEMPERATURE: 
$$\begin{array}{r} 60.900 \\ + 459.7 \\ \hline 520.600 \end{array} = \text{DEGREES F}$$

V = 1.4

CALCULATE THE LEAK RATE PER THE FOLLOWING:

$$\text{LEAK RATE} = \frac{579.478 (1.4)}{T} (P_1/T_1 - P_2/T_2)$$

LEAK RATE = 0.0208 SCCS

V = 1.4

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.19 RH 135 Vent Plug & Leak Check

RH AFT FIELD JOINT 135 DEGREE VENT PORT PLUG LEAK CHECK

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
GREASE	1U51916-09	ECL-0075
PLUG, BOTTOM	1U76425-01	ECL-0114
PLUG, TOP	1U76425-03	ECL-0021
PLUG, CLOSURE	1U50159-02	ECL-0007
O-RING, PRIMARY	1U50228-44	ECL-0015
O-RING, SECONDARY	1U50228-15	ECL-0116
O-RING, CLOSURE	1U50228-25	ECL-0067

LEAK TEST DATA

1. START TIME (TO THE SECOND): 04:45:00
2. INITIAL ISOLATION PRESSURE: 1002.000 PSIG  

$$+ \frac{14.696}{1016.696} = P1$$
3. INITIAL ISOLATION TEMPERATURE: 63.400 DEGREES F  

$$+ \frac{459.7}{523.100} = T1$$
4. STOP TIME (TO THE SECOND): 05:00:00 (MINUTES \* 60)  

$$(PLUS SECONDS)$$
  
 ELAPSED TIME IN SECONDS: 900 = T
5. FINAL ISOLATION PRESSURE: 985.000 PSIG  

$$+ \frac{14.696}{999.696} = P2$$
6. FINAL ISOLATION TEMPERATURE: 63.300 DEGREES F  

$$+ \frac{459.7}{523.000} = T2$$

V = 1.4

CALCULATE THE LEAK RATE PER THE FOLLOWING:

$$\text{LEAK RATE} = \frac{579.478 (1.4)}{T} (P1/T1 - P2/T2)$$

LEAK RATE = 0.029 SCCS

V = 1.4

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.19 RH 135 Vent Plug & Leak Check (continued)

RH CENTER FIELD JOINT 135 DEGREE VENT PORT PLUG LEAK CHECK

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
GREASE	1U51916-09	ECL-0069
PLUG, BOTTOM	1U76425-01	ECL-0014
PLUG, TOP	1U76425-03	ECL-0021
PLUG, CLOSURE	1U50159-02	ECL-0007
O-RING, PRIMARY	1U50228-44	ECL-0015
O-RING, SECONDARY	1U50228-15	ECL-0116
O-RING, CLOSURE	1U50228-25	ECL-0067

LEAK TEST DATA

1. START TIME (TO THE SECOND): 01:15:00
2. INITIAL ISOLATION PRESSURE: 1001.000 PSIG  

$$+ \frac{14.696}{1015.696} = P1$$
3. INITIAL ISOLATION TEMPERATURE: 64.9 DEGREES F  

$$+ \frac{459.7}{524.600} = T1$$
4. STOP TIME (TO THE SECOND): 01:30:00 (MINUTES \* 60)  
 ELAPSED TIME IN SECONDS: 900 = T  
 (PLUS SECONDS)
5. FINAL ISOLATION PRESSURE: 985.000 PSIG  

$$+ \frac{14.696}{999.696} = P2$$
6. FINAL ISOLATION TEMPERATURE: 64.300 DEGREES F  

$$+ \frac{459.7}{524.000} = T2$$

V = 1.4

CALCULATE THE LEAK RATE PER THE FOLLOWING:

$$\text{LEAK RATE} = \frac{579.478 (1.4)}{T} (P1/T1 - P2/T2)$$

$$\text{LEAK RATE} = 0.026 \text{ SCCS} \quad V = 1.4$$

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.19 RH 135 Vent Plug & Leak Check (continued)

RH FORWARD FIELD JOINT 135 DEGREE VENT PORT PLUG LEAK CHECK

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
GREASE	1U51916-09	ECL-0075
PLUG, BOTTOM	1U76425-01	ECL-0014
PLUG, TOP	1U76425-03	ECL-0021
PLUG, CLOSURE	1U50159-02	ECL-0019
O-RING, PRIMARY	1U50228-44	ECL-0015
O-RING, SECONDARY	1U50228-15	ECL-0116
O-RING, CLOSURE	1U50228-25	ECL-0067

LEAK TEST DATA

1. START TIME (TO THE SECOND): 03:20:00
2. INITIAL ISOLATION PRESSURE: 1001.000 PSIG  

$$\begin{array}{r}
 + \quad \underline{14.696} \\
 \hline
 1015.696
 \end{array} = P1$$
3. INITIAL ISOLATION TEMPERATURE: 67.400 DEGREES F  

$$\begin{array}{r}
 + \quad \underline{459.7} \\
 \hline
 527.100
 \end{array} = T1$$
4. STOP TIME (TO THE SECOND): 03:35:00 (MINUTES \* 60)  

$$\begin{array}{r}
 + \quad \underline{900} \\
 \hline
 900
 \end{array} = T$$
  
 ELAPSED TIME IN SECONDS: 900 = T
5. FINAL ISOLATION PRESSURE: 986.000 PSIG  

$$\begin{array}{r}
 + \quad \underline{14.696} \\
 \hline
 1000.696
 \end{array} = P2$$
6. FINAL ISOLATION TEMPERATURE: 67.3 DEGREES F  

$$\begin{array}{r}
 + \quad \underline{459.7} \\
 \hline
 527.000
 \end{array} = T2$$

V = 1.4

CALCULATE THE LEAK RATE PER THE FOLLOWING:

$$\text{LEAK RATE} = \frac{579.478 (1.4)}{T} (P1/T1 - P2/T2)$$

LEAK RATE = 0.0253 SCCS

V = 1.4

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.20 LH Field Joint Closeout

AFT FIELD JOINT CLOSEOUT

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
JOINT HEATER	1U77252-01	0000164	1/26/93
SENSOR ASSY	1U77076-01	0000083	1/26/93
SENSOR ASSY	1U77076-02	0000110	1/26/93
THERMAL BAR.	1U77157-01	ECL0129	1/26/93
HEATER STRAP	1U77114-01	0000195	1/28/93
LINK	1U77119-01	0000197	1/28/93
CLIP	1U77120-01	0000164	1/28/93
AFT CORK STRIP	1U77160-01	ECL-0102 10ea ECL-0117 2ea	1/29/93 1/29/93
FWD CORK STRIP	1U77160-02	ECL-0108 10ea ECL-0085 2ea	1/29/93 1/29/93

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.20 LH Field Joint Closeout (continued)

CENTER FIELD JOINT CLOSEOUT

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
JOINT HEATER	1U77252-01	00000162	1/29/93
SENSOR ASSY	1U77076-01	0000092	1/29/93
SENSOR ASSY	1U77076-02	0000109	1/29/93
THERMAL BAR.	1U77157-01	0000125	1/30/93
HEATER STRAP	1U77114-01	0000184	1/30/93
LINK	1U77119-01	0000196	1/30/93
CLIP	1U77120-01	0000163	1/30/93
AFT CORK STRIP	1U77160-01	ECL-0106 2ea ECL-0119 10ea	2/01/93 2/01/93
FWD CORK STRIP	1U77160-02	ECL-0094 12ea	2/01/93

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.20 LH Field Joint Closeout (continued)

FORWARD FIELD JOINT CLOSEOUT

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
JOINT HEATER	1U77252-01	0000157	2/01/93
SENSOR ASSY	1U77076-01	0000081	2/01/93
SENSOR ASSY	1U77076-02	0000080	2/01/93
THERMAL BAR.	1U77157-01	0000139	2/01/93
HEATER STRAP	1U77114-01	0000192	2/02/93
LINK	1U77119-01	0000188	2/02/93
CLIP	1U77120-01	00000196	2/02/93
AFT CORK STRIP	1U77160-01	ECL-0111 2ea ECL-0118 10ea	2/02/93
FWD CORK STRIP	1U77160-02	ECL-0096 2ea ECL-0098 10ea	2/02/93

**8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)**

**RSRM: 031      BIO: 58      STS: 56**

**8.21 RH Field Joint Closeout**

**AFT FIELD JOINT CLOSEOUT**

<b>ITEM</b>	<b>PART NO.</b>	<b>SERIAL/LOT NO.</b>	<b>DATE</b>
JOINT HEATER	1U77252-01	0000161	2/02/93
SENSOR ASSY	1U77076-01	0000093	2/02/93
SENSOR ASSY	1U77076-02	0000103	2/02/93
THERMAL BAR.	1U77157-01	ECL-0131	2/02/93
HEATER STRAP	1U77114-01	0000197	2/02/93
LINK	1U77119-01	0000149	2/02/93
CLIP	1U77120-01	0000182	2/02/93
AFT CORK STRIP	1U77160-01	ECL-0076 7ea ECL-0121 5ea ECL-0090 2ea ECL-0112 10ea	2/02/93
FWD CORK STRIP	1U77160-02		2/02/93

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.21 RH Field Joint Closeout (continued)

CENTER FIELD JOINT CLOSEOUT

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
JOINT HEATER	1U77252-01	0000132	2/02/93
SENSOR ASSY	1U77076-01	0000091	2/02/93
SENSOR ASSY	1U77076-02	0000102	2/02/93
THERMAL BAR.	1U77157-01	ECL-0130	2/03/93
HEATER STRAP	1U77114-01	0000191	2/03/93
LINK	1U77119-01	0000154	2/03/93
CLIP	1U77120-01	0000181	2/03/93
AFT CORK STRIP	1U77160-01	ECL-0097 1 EA -0110 1 EA -0107 1 EA -0109 2 EA -0114 3 EA -0120 2 EA	2/03/93
FWD CORK STRIP	1U77160-02	ECL-0068 2 EA -0071 1 EA -0087 2 EA -0091 2 EA -0093 2 EA -0113 1 EA	2/03/93

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.21 RH Field Joint Closeout (continued)

FORWARD FIELD JOINT CLOSEOUT

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
JOINT HEATER	1U77252-01	0000168	2/08/93
SENSOR ASSY	1U77076-01	0000090	2/08/93
SENSOR ASSY	1U77076-02	0000087	2/08/93
THERMAL BAR.	1U77157-01	0000128	2/09/93
HEATER STRAP	1U77114-01	0000196	2/09/93
LINK	1U77119-01	0000152	2/09/93
CLIP	1U77120-01	0000183	2/09/93
AFT CORK STRIP	1U77160-01	ECL-0084 1 EA -0116 5 EA -0096 1 EA -0087 2 EA -0102 3 EA	2/09/93
FWD CORK STRIP	1U77160-02	ECL-0086 1 EA -0099 11 EA	2/09/93

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SPACE OPERATIONS

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031      BIO: 58      STS: 56

8.22 Forward Assembly Installation (LH/RH)

LH DATE: 1/27/92

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PINS	1U51055-03	ECL-0003	195

STRAPPING KIT	1U75345-07	0000171	1
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RH DATE: 2/06/93

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PINS	1U51055-03	ECL-0008	56
	1U51055-03	ECL-0002	139

STRAPPING KIT	1U75345-07	0000166	1
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8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.23 LH Safe and Arm Installation

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
SAFE & ARM	1U52295-08	0000001	2/23/93
GASKET	1U77464-01	0000026	2/23/93
BOLTS	1U51569-02	ECL-0011	2/23/93
WASHER	MS21206-C6	ECL-0018	2/23/93

LEAK CHECK DATA

DATE: 2/23/93

PRIMARY TO		ALLOWED	ACTUAL RATE
SECONDARY	1000 PSIG DECAY LEAK RATE	.10	-0.000381 SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	-0.000036 SCCS

PRINTOUT PLACED IN DATA BOOK BY: D. CRAWFORD

LEAK CHECK PORT PLUG DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
O-RING	1U50228-25	ECL-0068	2/23/93

PLUG INSTALLATION VERIFIED BY: D. CRAWFORD

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.24 RH Safe and Arm Installation

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
SAFE & ARM	1U52295-08	0000002	2/23/93
GASKET	1U77464-01	0000028	2/23/93
BOLTS	1U51569-02	ECL-0011	2/23/93
WASHER	MS21206-C6	ECL-0018	2/23/93

LEAK CHECK DATA

DATE: 2/25/93

PRIMARY TO		ALLOWED	ACTUAL RATE
SECONDARY	1000 PSIG DECAY LEAK RATE	.10	0.00053 SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	-0.00311 SCCS

PRINTOUT PLACED IN DATA BOOK BY: THI LSS QUALITY

LEAK CHECK PORT PLUG DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
O-RING	1U50228-25	ECL-0068	2/25/93

PLUG INSTALLATION VERIFIED BY: T. WHITE

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.25 LH Verification of Leak Check/Vent Port Plug Installation

<u>ITEM</u>	<u>PHOTO REVIEWED BY</u> FLOW LEAD (INITIALS)	<u>DATE</u>
SAFE & ARM 306 DEG. LK CK PORT PLUG	DRC	3-11-93
FORWARD JOINT 135 DEG. VENT PORT PLUG	DRC	4-20-93
FORWARD JOINT 45 DEG. LK CHECK PORT PLUG	DRC	3-11-93
CENTER JOINT 135 DEG. VENT PORT PLUG	DRC	3-11-93
CENTER JOINT 45 DEG. LK CHECK PORT PLUG	DRC	4-2-93
AFT JOINT 135 DEG. VENT PORT PLUG	DRC	4-20-93
AFT JOINT 45 DEG. LK CHECK PORT PLUG	DRC	4-20-93
AFT EXIT CONE 270 DEG. LEAK CHECK PORT PLUG	DRC	3-11-93

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.26 RH Verification of Leak Check/Vent Port Plug Installation

<u>ITEM</u>	<u>PHOTO REVIEWED BY</u> FLOW LEAD (INITIALS)	<u>DATE</u>
SAFE & ARM 306 DEG. LK CK PORT PLUG	DRC	3-11-93
FORWARD JOINT 135 DEG. VENT PORT PLUG	DRC	4-20-93
FORWARD JOINT 45 DEG. LK CHECK PORT PLUG	DRC	4-20-93
CENTER JOINT 135 DEG. VENT PORT PLUG	DRC	3-11-93
CENTER JOINT 45 DEG. LK CHECK PORT PLUG	DRC	4-2-93
AFT JOINT 135 DEG. VENT PORT PLUG	DRC	4-20-93
AFT JOINT 45 DEG. LK CHECK PORT PLUG	DRC	4-2-93
AFT EXIT CONE 270 DEG. LEAK CHECK PORT PLUG	DRC	4-12-93

**8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)**

RSRM: 031      BIO: 58      STS: 56

**8.27 Roll to Pad Date:**      **3/15/93**

**8.28 Launch Date:**      **4/08/93**

**8.29 Segment Return to Utah:**

	<u>AFT SEG</u>	<u>AFT CTR SEG</u>	<u>FWD CTR SEG</u>	<u>FWD SEG</u>
LH: DATE	4/22/93	4/22/93	4/22/93	4/22/93
R/R CAR #	UP50024	UP50020	KCS710008	UP50027
RH: DATE	4/22/93	4/22/93	4/22/93	4/22/93
R/R CAR #	UP50022	CSXT600510	KCS719941	FEC101

**8.30 Exit Cone Return to Utah:**

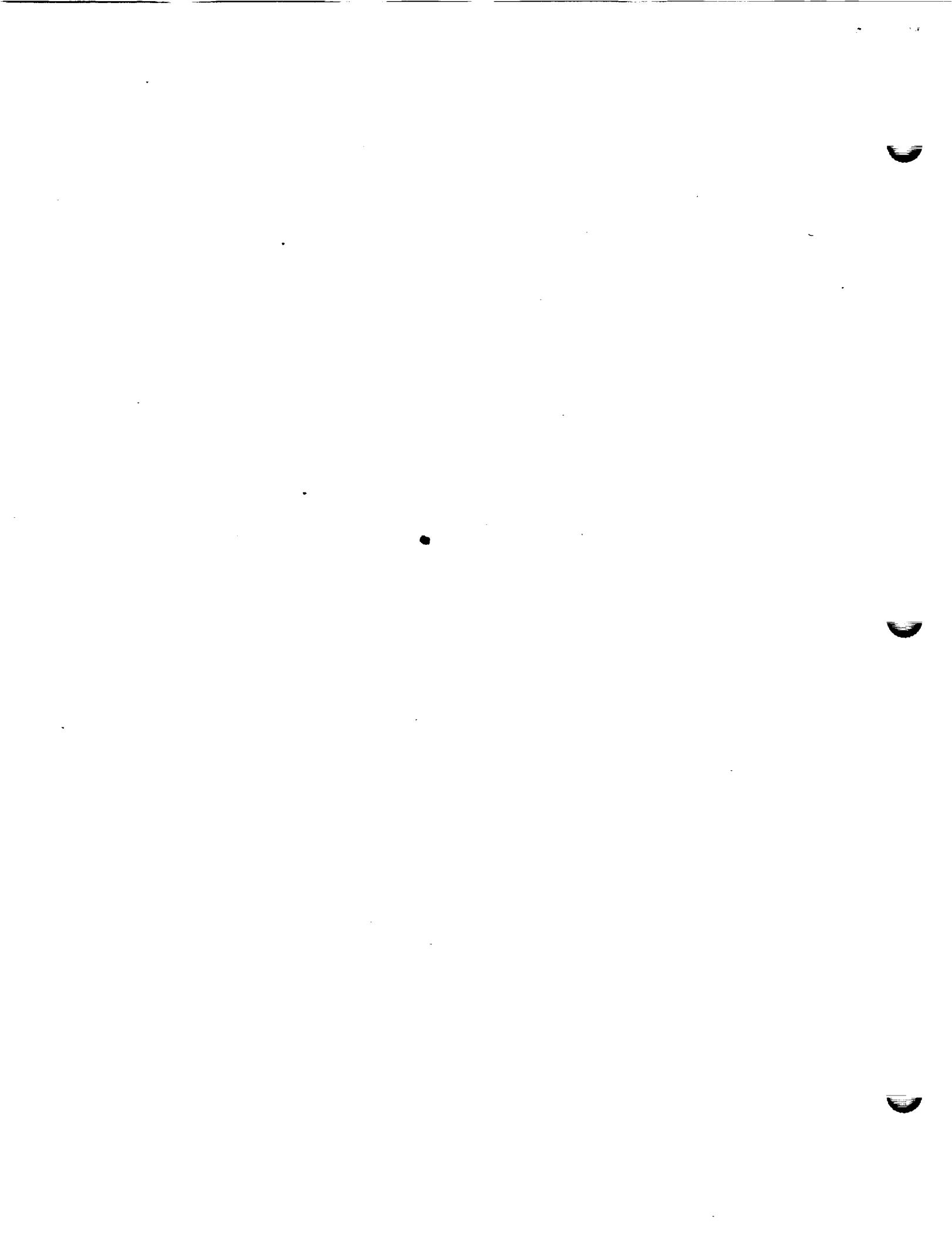
LH: DATE 4/14/93      RH: DATE 4/14/93

TRANS CO: YOWELL TRK CO.  
SHIPPING No: TRAILER 149L      TRAMS CO: YOWELL TRK CO.  
SHIPPING No: TRAILER 149L

**8.31 Nozzle Return to Utah**

LH: DATE 4/15/93      RH: DATE 4/15/93

TRANS CO: YOWELL TRK CO.  
SHIPPING No: TRAILER 5836      TRAMS CO: YOWELL TRK CO.  
SHIPPING No: TRAILER 5836



APPENDIX A

Engineering Specifications and Changes

AFT BOOSTER BUILD-UP DRAWING: 1U76950-03 REVISION: A ECO: 2,3,5,6

ASSEMBLY AND CLOSEOUT DRAWING: 1U77426-02 REVISION: A ECO: 7

STACKING SPECIFICATION: STW9-3835 REVISION: L SCN: 17A

FECs APPLICABLE TO THIS FLOW:

FEC RSRM-093 Application of a continuous coat of lubricant to the back outside surface of all RSRM Joint volume filler sections prior to installation.

TCTIs APPLICABLE TO THIS FLOW:

N/A

SPECIAL ACTION REQUEST (CHIT) APPLICABLE TO THIS FLOW:

N/A

APPENDIX A

Engineering Specifications and Changes (continued)

The following list provides the OMI title, OMI number, and OMI Revision as it applied to RSRM-031 (STS-56):

<u>OMI Title</u>	<u>OMI No.</u>	<u>OMI Rev.</u>
Stacking and Alignment Operations	B5303	T
SRB System Mate and Closeout	B5304	N
Aft Booster Assembly Electrical Buildup	B5305	R
SRB Ordnance Connection and Pad Closeout	B5306	K
SRB Cable Installation and Checkout and Prepower Electrical Checks	B5307	Q
SRB RPSF Operations	B5308	P
Aft Booster Assembly (RPSF)	B5309	Q
SRB Standard Technical Practices	B5311	H

APPENDIX B

Problem Reports (PRs)

The following pages represent Problem Reports (PRs) that were initiated during the operational flow of RSRM-031, STS-56.

PROBLEM REPORT COUNT

RSRM-031  
STS-56

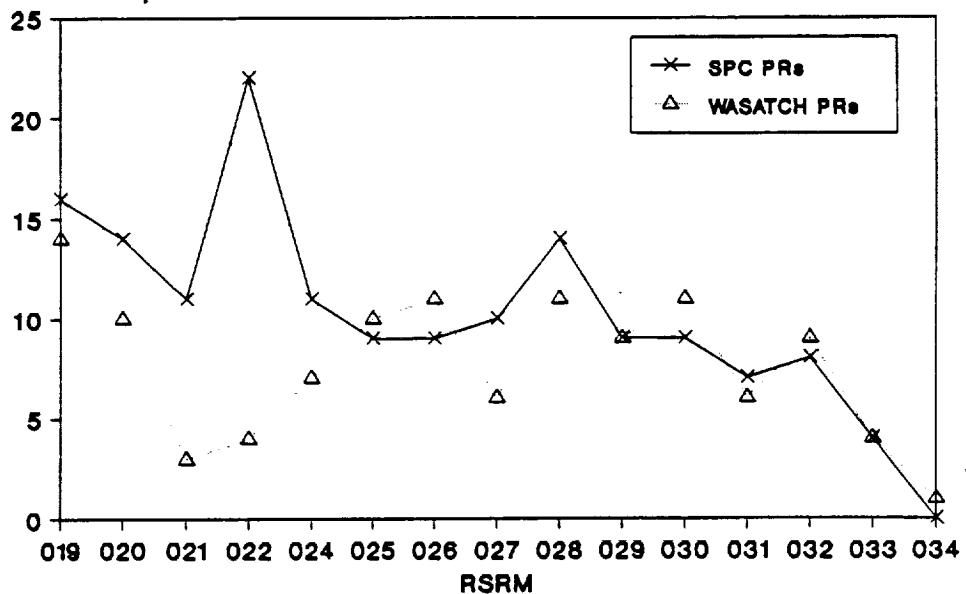
	TOTAL PR'S	SRM ONLY	SRM OPEN	WASATCH RESP.	PRs SENT TO WAS.	TAIR LOG STATUS
<b>LEFT</b>						
SR-LF-58-006 (R&I FORWARD)	0	0	0	0	0	CLOSED
SR-LFC-58-006 (R&I CTR. FORWARD)	0	0	0	0	0	CLOSED
SR-LAC-58-006 (R&I CTR. AFT)	1	1	0	1	1	CLOSED
SR-LA-58-005 (R&I AFT)	0	0	0	0	0	CLOSED
SR-EC-58L-007 (R&I EXIT CONE)	0	0	0	0	0	CLOSED
AB-BI058L (AFT BUILDUP)	4	0	0	0	0	CLOSED
SB-BI058L (ASSEMBLY)	9	6	0	3	5	
<b>RIGHT</b>						
SR-RF-58-006 (R&I FORWARD)	0	0	0	0	0	CLOSED
SR-RFC-58-006 (R&I CTR. FORWARD)	0	0	0	0	0	CLOSED
SR-RAC-58-006 (R&I CTR. AFT)	0	0	0	0	0	CLOSED
SR-RA-58-003 (R&I AFT)	0	0	0	0	0	CLOSED
SR-EC-58R-015 (R&I EXIT CONE)	0	0	0	0	0	CLOSED
AB-BI058R (AFT BUILDUP)	6	2	0	1	2	CLOSED
SB-BI058R (ASSEMBLY)	10	4	0	1	4	
<b>GENERAL</b>						
AB-BI058 (AFT BUILDUP)	0	0	0	0	0	CLOSED
SB-BI058 (ASSEMBLY)	4	0	0	0	0	
<b>TOTAL</b>	<b>34</b>	<b>13</b>	<b>0</b>	<b>6</b>	<b>12</b>	

NOTE: TOTAL PR'S OPEN (INCLUDING THIOKOL & USBI)= 0

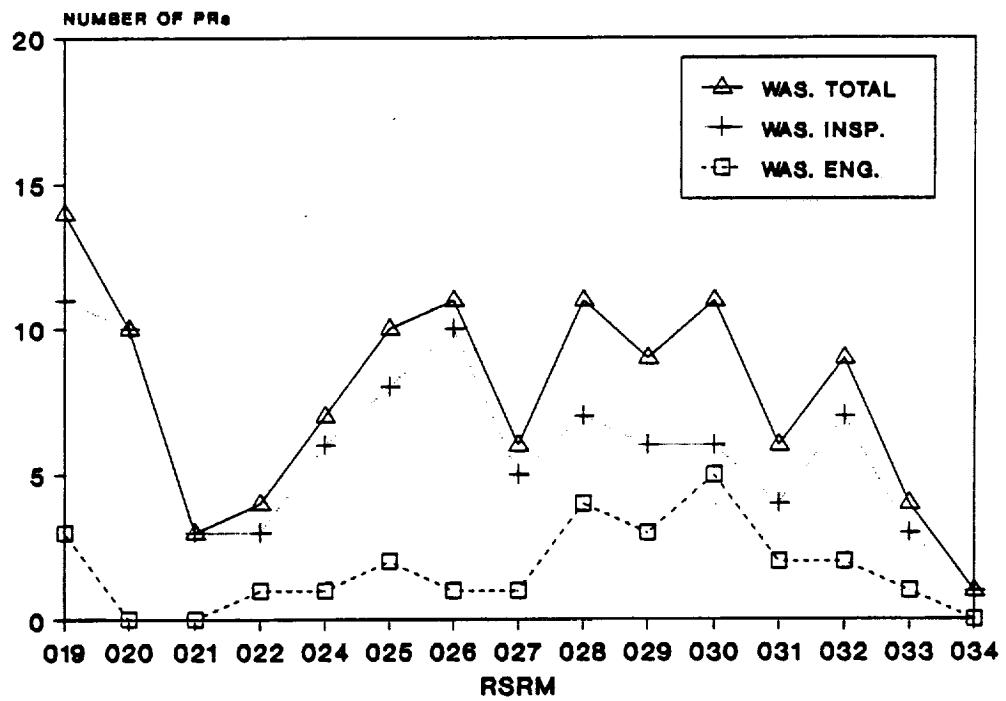
04/22/93 TAIR COUNT AT 0543 HOURS.

PR CLOSURE COUNT IS SUBJECT TO ENGINEERING EVALUATION  
AND IS BASED ON THE PREMISE THAT WORK IS 'COMPLETE'.

# WASATCH/SPC PR TRENDS



## WASATCH PRs



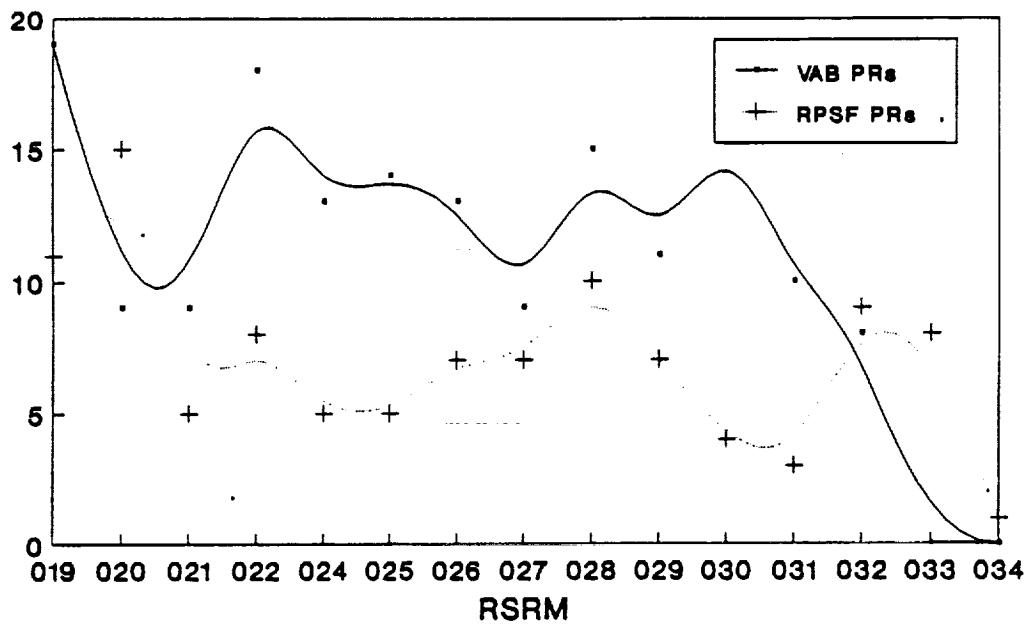
# OPEN CAARS

FLIGHT	CAAR NUMBER	CAR NUMBER	DATE ISSUED	DAYS OPEN	RESP. ORGAN.

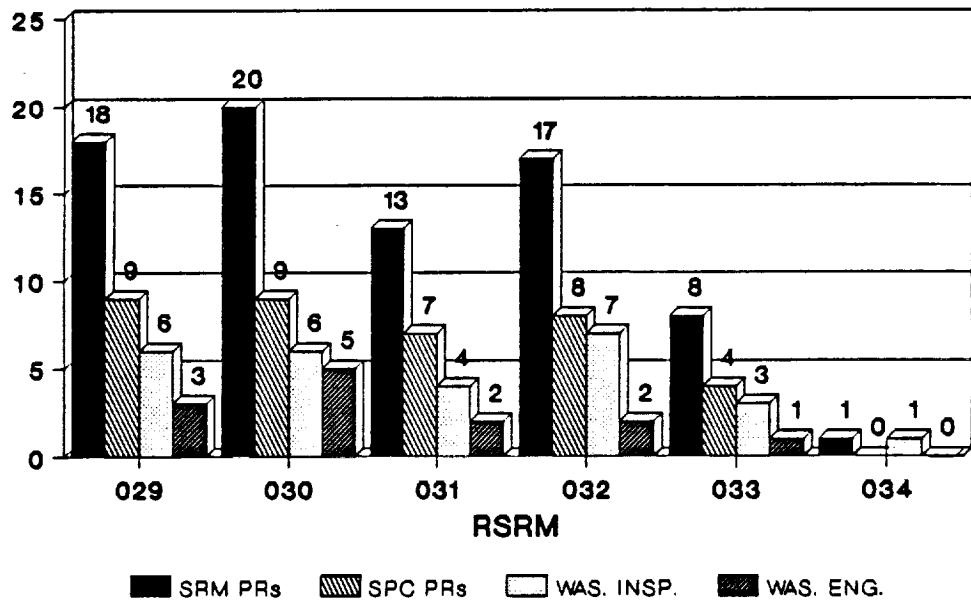
# CAAR DATA

ACTIVITY	TOTAL CAAR'S	OPEN CAAR'S
RSRM-028	1	0
RSRM-029	0	0
RSRM-030	1	0
RSRM-031	1	0
RSRM-032	1	0
RSRM-033	0	0
RSRM-034	0	0
MISCELLANEOUS	11	0

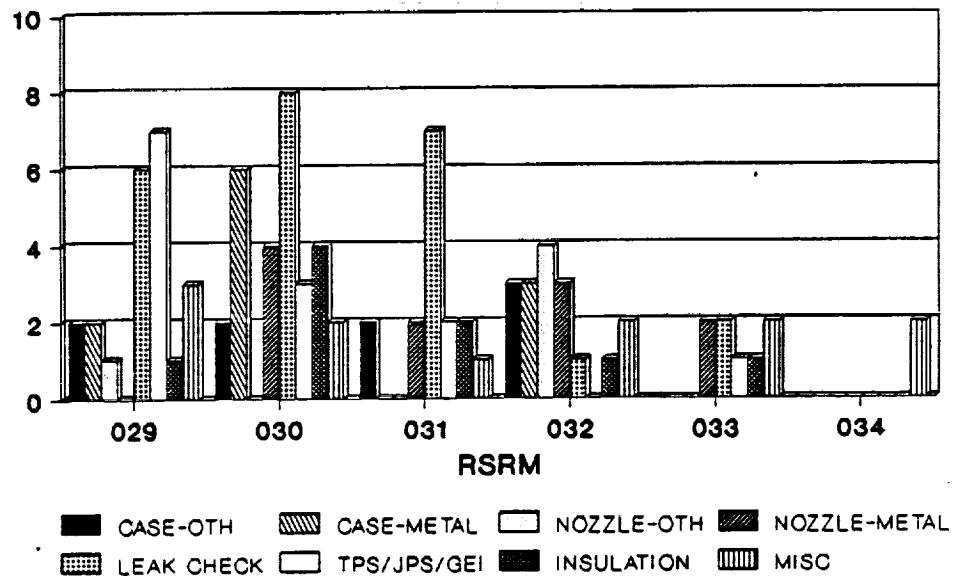
## VAB & RPSF PR TREND



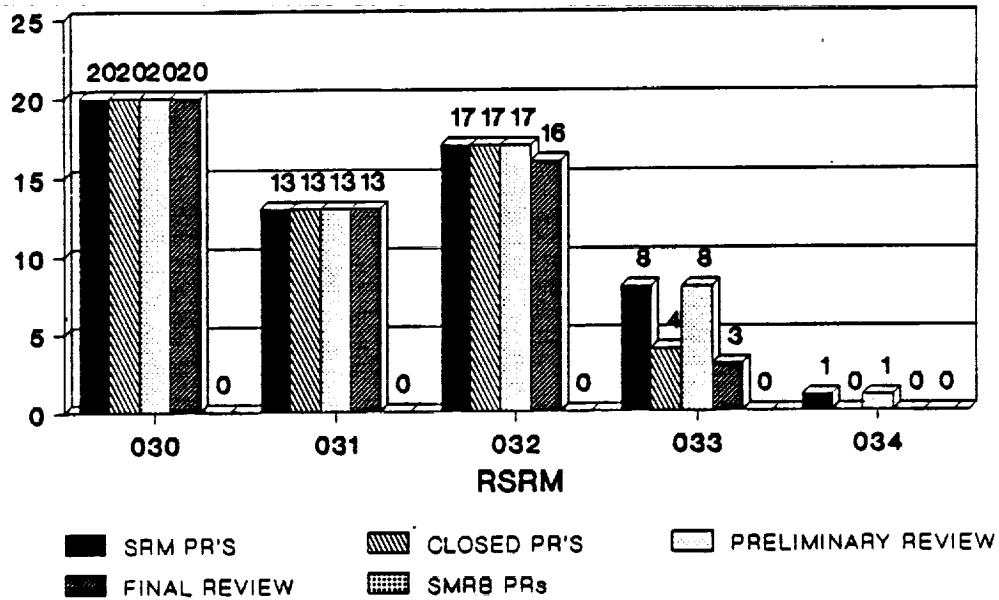
## RESPONSIBILITY BREAKDOWN



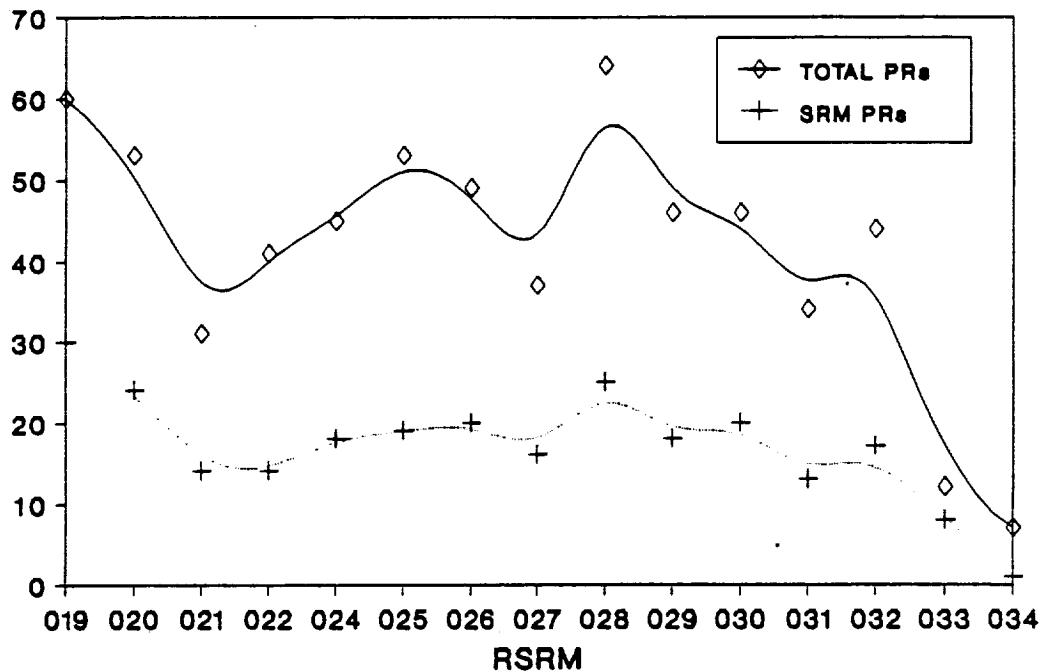
## DISCREPANCY BREAKDOWN



## PR SMRB ASSESSMENT

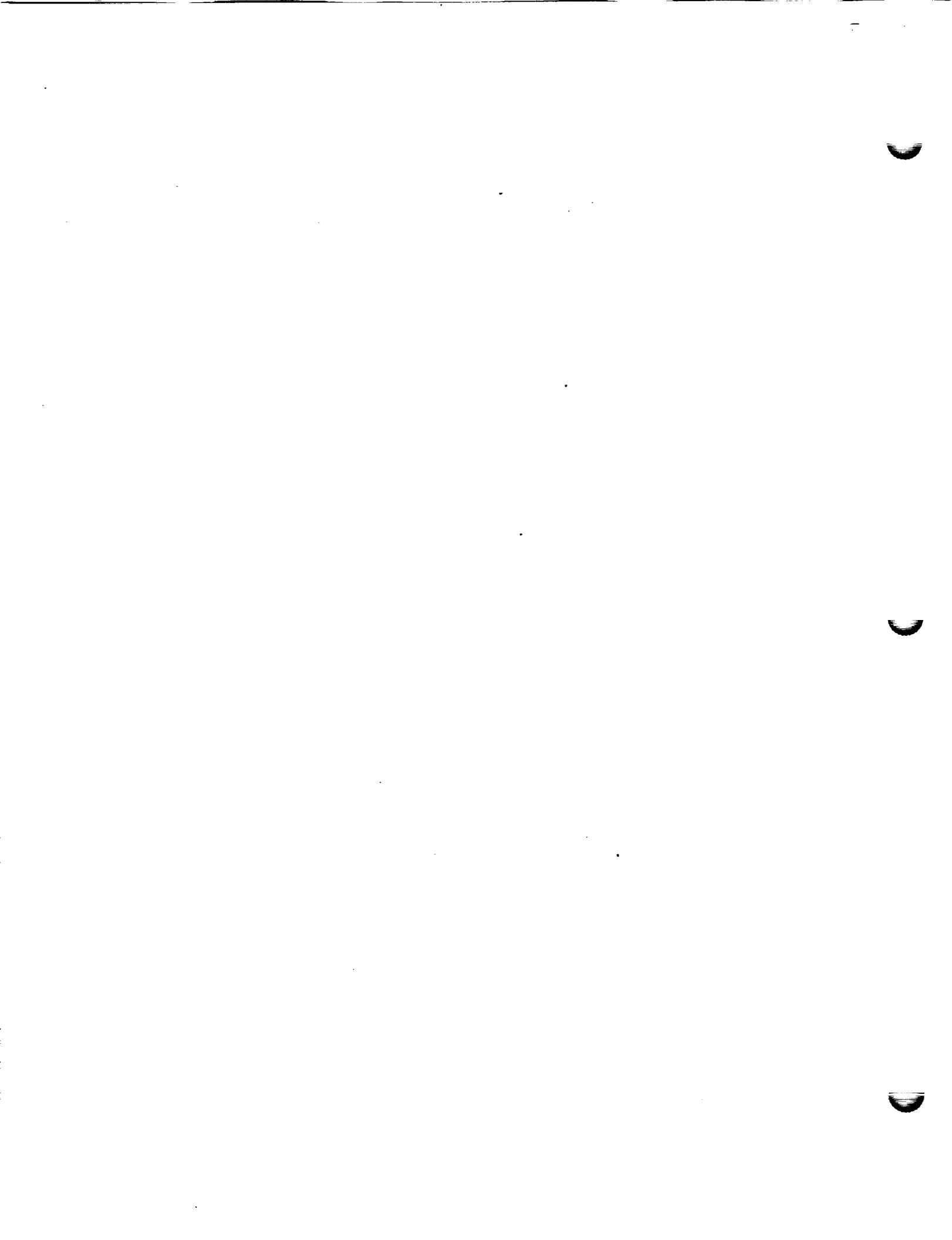


## PR TREND



## ASSEMBLY DATA

FLIGHT	TOTAL PR'S	SRM PR'S	CLOSED PR'S
<hr/>			
RSRM-019	60	30	30
RSRM-020	53	24	24
RSRM-021	31	14	14
RSRM-022	41	14	14
RSRM-024	45	18	18
RSRM-025	53	19	19
RSRM-026	49	20	20
RSRM-027	37	16	16
RSRM-028	64	25	25
RSRM-029	46	18	18
RSRM-030*	46	20	20
RSRM-031*	34	13	13
RSRM-032*	44	17	17
RSRM-033*	12	8	4
RSRM-034*	7	1	0



**APPENDIX C**

**The Motor Set Status can be found on the following page.**

# MOTOR SET STATUS

STS-56 BIO-58 360L031

AS OF 26 APRIL 1993

A (LH)	B (RH)	ON DOCK KSC	OFF LOAD	RECEIVING INSPECTION	LOCATION	JOINT MATE	LEAK CHECK	HEATER INSTALL	JOINT CLOSEOUT	CABLE INSTALL	HEATER CHECKOUT
1U52295-08	A 11 JAN 93	20 JAN 93	PAD B	A 22 FEB 93	25 FEB 93						
		CHECKOUT		INSTALLATION							
00000001	B 11 JAN 93	20 JAN 93	PAD B	B 22 FEB 93	25 FEB 93						
10R5	43R2	A 18 NOV 92	1 DEC 92	2 DEC 92	PAD B						
68R5	FWD 6SEG 17R2	—	—	—							
24R1	B 10 DEC 92	11 DEC 92	14 DEC 92	PAD B	A 26 JAN 93	27 JAN 93	1 FEB 93	2 FEB 93	10 FEB 93	10 FEB 93	19 FEB 93
12R5	73R4	A 18 NOV 92	3 DEC 92	5 DEC 92	PAD B	B 5 FEB 93	6 FEB 93	8 FEB 93	11 FEB 93	16 FEB 93	19 FEB 93
77	FWD CTR SEG 55R1	—	—	—	PAD B	A 22 JAN 93	23 JAN 93	29 JAN 93	1 FEB 93	10 FEB 93	19 FEB 93
40R5	10R4	A 18 NOV 92	7 DEC 92	9 DEC 92	PAD B	B 31 JAN 93	1 FEB 93	2 FEB 93	3 FEB 93	16 FEB 93	19 FEB 93
20R3	AFT CTR SEG 58R1	B 10 DEC 92	9 JAN 93	12 JAN 93	PAD B	A 19 JAN 93	22 JAN 93	26 JAN 93	29 JAN 93	10 FEB 93	19 FEB 93
48	30R3	A 6 NOV 92	9 NOV 92	16 DEC 92	PAD B	B 29 JAN 93	31 JAN 93	2 FEB 93	3 FEB 93	16 FEB 93	19 FEB 93
95	AFT SEG 47B3	—	—	—	PAD B						
94	56R2	—	—	—							
61R16	30R4	B 18 NOV 92	25 NOV 92	14 JAN 93	PAD B						
132	AEO 46R3	A 6 NOV 92	18 NOV 92	20 NOV 92	PAD B	A 23 NOV 92	24 NOV 92				
		B 6 NOV 92	18 NOV 92	20 NOV 92	PAD B	B 11 DEC 92	16 DEC 92				
		A 11 NOV 92				A 12 JAN 93					
			SKIRT MATE								
			B 30 NOV 92								
FORWARD ASSEMBLY MATE LH 27 JAN 93 RH 6 FEB 93											
ET/SRB MATE 10 FEB 93 ORBITER MATE 3 MAR 93											
ROLL TO PAD 15 MAR 93 FWD SKT CLOSEOUT L/H 5 APR 93 R/H 5 APR 93											
 Launch 8 APRIL 93											

Legend

- ON DOCK KSC — ROLL CARS PHYSICALLY ON KSC
- OFFLOAD — SEGMENT LIFTED FROM THE ROLLCAR
- REC / INSP — COMPLETE WHEN WEATHER COVER INST
- FIELD JOINT/AFT SKIRT MATE — LAST PIN INSTALLED
- AFT BOOSTER ON MLP — BEAM DISCONNECT
- AEC MATED — LAST BOLT TORQUED
- LEAK CHECK — VENT AND LK PLUGS INSTALLED
- HEATER INSTALL — HEATER INSTALLED ON SEGMENT
- CABLE INSTALL — ALL HEATER CABLES CONNECTED
- JOINT CLOSEOUT — ALL JPS PAINT TOP COAT INSTALLATION COMPLETE
- HEATER CHECKOUT, FIELD JOINT AND IGNITER — B5307
- TASK 6 COMPLETED
- FORWARD ASSEMBLY MATE — LAST PIN INSTALLED
- ET / SRB MATE — BEAM DISCONNECTED FROM ET
- ORBITER MATE — BEAM DISCONNECTED FROM ORBITER
- ROLL TO PAD — FIRST MOTION IN THE VAB
- FWD SKT CLOSEOUT — FORWARD SKIRT DOOR INST

FORWARD ASSEMBLY MATE LH 27 JAN 93 RH 6 FEB 93

ET/SRB MATE 10 FEB 93 ORBITER MATE 3 MAR 93

ROLL TO PAD 15 MAR 93 FWD SKT CLOSEOUT L/H 5 APR 93 R/H 5 APR 93

Third e CORPORATION

KSC Operations C ice  
LSS FLOW ENGINEER - D. Crawford  
(407) 867-2704

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